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INDEX TO CONTENTS, PAGE 305. - - - - - - - - ADVERTISERS' INDEX, PAGE 22.

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CONTENTS.

An Asterisk (*) Denotes an Illustrated Article.

Mr. Oscar H. Fogg Talks to Londoners 305

*The Behavior of Water in Holder Cups and Tanks, by Mr. Herbert W. Alrich 307

Practical Effects of the Michigan Workmen's Compensation Law Especially as it Affects Gas Companies, by Mr. A. G. Schroeder. 311

EDITORIALS—

Briefly Told 312

The Philadelphia Convention, N. C. G. A.—Education of Employees New Jersey State Gas Association—The Key West Gas Company's Employees' Association—Publicity Defeats Municipal Ownership Proposition—Current Mention.

NEW METHODS AND APPLIANCES 315

*An Installing of the Speedy Order—Removing Carbon from Gas Engines—*An Electrical Gas Meter—*A Safety Gas Meter.

CORRESPONDENCE—

Mr. Berkley Explains the Situation 317

Recent Patent Issues 318

ITEMS OF INTEREST FROM VARIOUS LOCALITIES 318

Personal—The Fayette (Pa.) Company's Employees' Association—Under Jurisdiction of the State Courts—Something from Missoula, Mont.—Extensions, Distributing System, Attleboro, Mass.—Some Changes—Bids for New Plant, Cincinnati, O.—Ths Gas Works for La Grange, Ga.—Personal—Special Election, Mt. Pleasant, Ia.—Proposed Works for Hibbing, Minn.—The New Gas Plant for Victoria, Tex.—Gas Employees Association, Reading, Pa.—A Huge Illuminated Sign—Cheaper Gas for Colton, Cal.—Reorganization, Seaford, Del.—Gas Plant for Decatur, Ga.—A Hint from Zeeland, Mich.—Changes in Capitalization, Midway (Cal.) Gas Company—Hints from Hillsboro, Ills.—Non-Suited, Watertown, N. Y.—And Other Items.

The Market for Gas Securities 320

Meeting Times of the Various Gas Associations 320

Public Lighting Table for November, 1913 (Advertising Section).. 10

Mr. Oscar H. Fogg Talks to Londoners.

At the second annual meeting of the British Commercial Gas Association, London, England, October 21 and 22, one of the much discussed addresses was that by Mr. Oscar H. Fogg, Engineer of Utilization, Consolidated Gas Company, New York. Comparing the work of the two National Commercial Gas Associations, Mr. Fogg said: "After 8 years of existance, we are now only about to launch a National Advertising Campaign similar to your own. We have considered and planned and nearly executed it several times; but you have done it, and did it well.

Perhaps they might consider that the efforts of the American Association in other channels would, to some extent, tend to balance the scales; for he believed that the National Commercial Gas Association had been an instrument of no small force in the development and improvement of the gas business in the United States. Need of concerted and systematic effort for stimulation of the commercial side of the gas business led to the formation of the National Commercial Gas Association in 1905, the originator of the plan being Mr. L. S. Bigelow. The policy of appealing to the public, by up-to-date and perfect service, and placing on sale only efficient and well tested appliances, had not till then been generally given the attention and consideration it now received. The manufacturers of gas consuming appliances were working independently of one another, and lack of co-operation left much to be desired. Primarly, the effort was to bring about more cordial relations between the public, the gas undertakings, and the manufacturers, as well as to give the latter opportunity to display their goods to gas men from all parts of the country, and at the same time afford gas men an opportunity for an exchange of ideas and plans—in short, an effort to place the commercial department on a sound, modern basis, conforming to present-day merchandizing methods.

"This policy has been continued and enlarged upon. Educational work is now an important factor. Advertising, while not entirely neglected heretofore, is now to be taken up much more actively. In every way the organization is in a prosperous, healthy condition, each factor working concertedly to maintain what we believed has long been established—the supremacy of gas. The annual conventions, held each year in a different city, include an exhibition of gas appliances. For the last four years the members attending the conventions has averaged 785, and the number of manufacturers exhibiting 82. The investigations and reports of the various committees cover a wide field, the numerous papers and lectures presented, the monthly bulletin and other publications, are of great value, and embody a wealth of useful information.

"The manufacturers of gas appliances have been encouraged by the Association to adopt a standard, loose-leaf catalogue form; the sheets of uniform size, perforated to fit a leather binder which the gas companies provide. This may seem trivial; but I mention it because the result has been that every salesman may have a complete illustrated handbook of the appliances his company has to offer, and one which, by the substitution of new sheets, can be kept constantly up-to-date. New data and price or memo-sheets may be inserted where desired, and in this way the salesman has, in compact form, and available for quick reference, material which otherwise would be difficult to collect and carry.

"During the past year booklets entitled 'A Thousand Uses for Gas' and 'Gas Illumination of Factories and Mills' have been issued, and booklets on window and showroom displays, and gas in the home are in preparation. The latter is designed as a standard reference book for architects, builders, plumbers, etc., as well as for the houseowner. It deals at length with the installation and operation of appliances, the piping of buildings, matters of ventilation, and gives much information of general character. There is also in preparation a 'Standard Salesman's Handbook,' intended to clearly and concisely set forth a description of the various forms of gas appliances, accompanied by illustrations, diagrams, and such technical information as might be desirable, designed to give the salesman a more intimate knowledge of the construction and operation of the article he sells.

"In an effort to improve the window and floor displays in gas companies' showrooms, the Association has collected photographs illustrating the best examples of such displays throughout the country, the photographs being kept at headquarters and loaned to gas companies, upon request. Lantern slides and moving picture films are coming in for their share of attention, a committee now working on them. Slides are already used by many companies, and it is intended to have available at headquarters an assortment, which companies can draw upon as desired.

"The advertising done so far has been limited to the distribution of the booklets referred to, and to the collection of good examples of newspaper advertising copy, reproductions of which are made and

distributed to the member-companies. The Association has not yet begun direct advertising, but had $55,000 pledged for this purpose two months ago, and hoped that this work would be actively under way before the end of the year.

"One important work undertaken is the preparation of standard specifications for the construction of gas appliances. The first section, dealing with domestic cooking appliances, has been completed and adopted, being formulated by a committee composed of manufacturers and gas company representatives. The conflicting requirements of existing specifications have been reconciled, and an important step taken in the direction of standardizing gas appliances. It is, perhaps, unnecessary to remark that too much standardization is worse than none; and we have been careful to stipulate nothing that would tend to hinder progress, destroy individuality, or in any way limit the manufacturer in his effort to better and improve his product. The intent is rather to encourage and assist in such improvement.

"Progress in all branches of our present day business life is rapid, methods constantly improve, the general tone of business intercourse advances, and we all realize now that the sale of service of the highest order is quite as important a part of our business as the sale of gas. We believe that, if we are to keep our business in the front rank, we must devote more attention to the educational betterment of our employees, particularly those who are much in contact with the public, as are the men of the selling organization. It is essential they should have, in addition to the personal attributes for which such work calls, intimate knowledge of that which they sell, and of the business they represent. In our opinion, the day of the 'canvasser' has gone, the demand being for salesmanship of the highest order. In the systematic education of men of this class we believe we are doing good work. Our method consists of graded correspondence courses of instruction, each course containing 10 or 12 monthly lessons, each lesson supplemented by a series of questions, the questions to be answered in writing by the student. His work is carefully examined and given a rating, and, if he completes the course satisfactorily, he receives a certificate to that effect. This work is carried on under the direction of a competent instructor, a Professor in the School of Commerce and Industry in one of the New York Universities. Associated with him is the Board of Educational Control—a body of gas men representing various sections of the country, who act in an advisory capacity, supplying technical data required, passing upon the lessons before they are sent to the student, and acting as a governing body in the educational work. When a sufficient number of students is found in any locality, the correspondence course is usually supplemented by class meetings, in which the lessons are explained and discussed under the leadership of a local member. We have gone far enough in this work to know that it yields much of practical value. In the first course, 725 students were enrolled, and 216 more enrolled when the first course was repeated. In the second (or advanced) course, 694 enrolled. These two courses dealt chiefly with the principles of gas salesmanship, but included such general instruction in company organization, departmental functions and their relation to selling effort, etc., as it was believed should be understood by every employee. We are now starting the third course, which deals with the utilization of gas and gas appliances. It is expected that not less than 1,200 students will take this course; for it provides information which the average employee realizes he lacks, and which he has not been able to acquire heretofore—except where the larger companies have undertaken such educational work, or where the ambitious employee has attempted to instruct himself through text-book or technical press. The great advantage of a systematic educational course, designed to meet the requirements of such men, is, of course, apparent.

"If in these hurriedly prepared notes there is anything of interest to the Association, please bear in mind that it would be a pleasure to the American Association to reply to inquiries, and provide full information on any of these matters which I have been able to but inadequately describe."

[In an appendix to his paper Mr. Fogg gave the titles of the committees of the National Gas Association and the syllabus of the Educational Course.]

In giving Mr. Fogg the voted thanks of the Association, the President (Mr. Edward Allen) said Mr. Fogg impressed him as a man of very great ability, chosen to do very important work. He had come to take notes and was a man qualified to note. They had benefited by the information given them as to the work carried on in America, and appreciated the courtesy of Mr. Fogg in acknowledging some successes that their Association has had. They, in turn, desired to express appreciation of the work being done in America. On both sides of the Atlantic they were working with the common aim of giving the people good gas service.

The discussion which followed was interesting and most complimentary, the members seeming to feel the importance of the communication. In replying to the discussion, Mr. Fogg said he wished to thank the gentlemen for the kindness and courtesy with which his remarks had been received. He had tried to describe the general activities of the American Association as distinct from the work done by the gas companies themselves, whose owners were not at all backward in independent promotion work. The company by which he was employed, under the leadership of Mr. George B. Cortelyou, one of the most progressive men in the United States, had set its mark on the gas industry in America. The specific activity of the several committees was a lengthy subject to discuss, but he would do as much as he could in the time at his disposal. The company membership committee dealt with increasing what they called company members. They had as individual members anyone interested in the gas business in any capacity whatever, and company members, gas companies, gas appliance manufacturers, or accessory manufacturers, or any firm or organization interested in the general gas business. This class of members they were trying to increase, because they got more money from them. They paid on a scale according to their output, or according to total revenue, if they were appliance manufacturers. They had found it advisable to make a specific appeal to increase that class of membership, hence the committee with that object. As to "Development of Industrial Fuel," they were idealists in a way. He liked to feel that he was an idealist, believing that if he spent one-half his time working and the other half dreaming, he was serving his employer pretty well; therefore they had a Committee of Dreamers—if one liked to call it that. They believed for "Industrial Fuel" that they had not scratched the surface yet. If they picked out half-a-dozen of their most imaginative men, and turned them into a big field, all to themselves, it would seem a very serious thing; but they knew they were going to come back with something; they were going to put their imagination into some specific thing that a practical man could work and turn to the good of the gas industry; if that was not very explicit, it was the best he could do. "Domestic Fuel" arose in this way: After the meeting in Atlanta, last year, one of the younger men said that the Association did not give enough attention to young men. Those who had established themselves, and become prominent in some way or other, were asked to take up work; but the young men also had some ideas on the subject of domestic appliances. They promptly appointed a committee, and made this young man chairman, without dreaming what it was going to do or caring much about it. Right away this young man brought ideas for the improvement of gas appliances, and especially as to the objections of servants to the existing types. They had met, he believed, every other objection, and thought he had met this; but found from tabulated information that they had not dreamed of them; they did not know anything about them; they were very much ashamed of themselves and were going to try to do it. The "Board of Education and Control" he could best describe as the governing body, having to do with all educational work of the Association. The work of the "Home Equipment" Committee was in the preparation of a booklet. It was a most pretentious booklet, in which they wanted to incorporate real, true, straightforward information that architects, builders and plumbers might read and take an interest in. The committee had been working on it for over two years and were being kept busy. The Committee of "Membership and Local Sections" was designed to attempt to increase individual membership and to organize local sections. They tried wherever there were enough gas men to organize local sections to meet monthly and discuss the various activities and work of the Association. The scheme had not thriven as yet, there being sections in only four cities, but it was a work they were trying to extend. As to "Relations with Consumer," they all knew there was something to be done there; an old monopoly could not fail to have something to do in that direction. They wanted to make their relations with their customers very much better, very much more cordial than they were, and to do everything that could be done to secure their confidence. This was the duty of that committee. The "Salesmen's Handbook" he had referred to in his paper. "Standardization of Gas Appliances' Specification" was a very delicate subject, and he did not want them to think he was advocating it. He could quite well realize that things that suited America and that were needed in America might be

entirely different from the things demanded by conditions over here. While not attempting anything more in reply, he wanted to say one thing; he wanted them to know that a very warm welcome awaited them in America. He had already been successful in persuading their honored President to be with them in America next year, and if they succeeded in making Mr. Allen feel half as much at home as they had made him feel, he would be quite content. The National Commercial Gas Association would welcome every member of the British Commercial Gas Association at any time, and be very much honored to do it, and whenever opportunity arose for co-operation by the two Associations, just let it be known.

The Behavior of Water in Holder Cups and Tanks.[1]

[A paper prepared by MR. HERBERT W. ALRICH, for the Eighth Meeting, American Gas Institute.]

The holder in its essential features was invented by the eminent French chemist Lavoisier some 10 years before Murdoch began to experiment with gas. Lavoisier's device was a laboratory appliance, but the enterprising Englishmen who founded the gas industry employed the principle in the construction of their reservoirs, and, adding sections, producing the telescopic holder.

Though the mechanical design and the quality of the materials have been much improved, and the size of the structures greatly increased, the gas holder has undergone no fundamental change and differs less from its prototype than any other apparatus for the manufacture and distribution of gas. While much less has been written on the design and construction of gas holders, but little of it has related to phenomena in the hydraulic cup. In 1899 articles on "The Action of Gas Holder Cups," appeared in the *Gas World*, their authorship not being disclosed.

In 1910 Mr. F. S. Cripps contributed three article to the *Journal of Gas Lighting* in w hich he (I.) discusses the behavior of cups while descending; (II.) gives formulæ for solving the previous cases; and (III.) develops the formulæ given in II.

In the *Journal fur · as Beleuchtung*, March 30, 1912, was an article upon holder cups by Mr. J. Schmidt, of Dortmund, displaying extensive knowledge of the subject. While concurring in their statements of theory the writer dissents from some of their assumptions and recommendatio ns.

During former years we were indifferent to the appearance of gas holders, but the ad vantages of a well-painted and inoffensive looking structure are now appreciated. To maintain this sightly appearance it is necessary that the tank water exterior to the holder sections shall be free from oil, for, as the sections move up and down, the painted surface of the shells intersects the surface of the exterior tank water, being discolored by the oil there. Or oil may get through the cup and act upon the paint. Cups of the proportions recommended by previous writers are efficient seals, and equally efficient pumps for drawing oil from the interior tank water, and it is my purpose to discuss cups designed to retain the oil within the interior of the holder.

While the principles governing cup design are independent of the size and pressures of the holder, some of the proportions must be accommodated to the specifications of each particular holder, but I believe that 3 variations of one cup design would satisfy the requirements of all the holders in the United States.

When a holder is being prepared for service the usual practice is to bring the water up to a level below the overflow line, equal to the maximum pressure *with gas*; but the holder, first inflated with air, gives a pressure exceeding the gas pressure by as much as 1½ inches. As the holder rises the level of the tank water falls, inside the holder actually and outside relatively, because of the water withdrawn from the tanks by the ascending cups, and the diminishing displacement of tank water by submerged metal. The first of these increments may amount to 1 inch and the second to 1½ inches, and as their sum will always exceed the difference between air and gas pressures, no water can be lost by filling a tank to such an assumed line. Extreme accuracy in locating the low water level when filling a tank is not recommended, but, as the influence of these factors is to be considered, they are introduced in order that their perspective relation may fully appear. Another increment of depression of the tank water level is the result of displacement of the water by the weight of the inflated holder. While the actual displacement of water occurs within the holder only, the water level exterior to the shell is depressed relatively exactly by the same amount. This is usually regarded as negligible, as its maximum amount is only ⅛-inch and frequently but ¼. It is mentioned here so it may be fully demonstrated that if, when a holder is inflated, the exterior tank water level is at the overflow line, the tank must contain more water than it is customary to provide at the first filling. Throughout this discussion it will be assumed that the tank contains this larger quantity of water.

1. Slightly abridged.—EDS.

Fig. 1 is a conventional representation of the 5 lifts of a holder in

PRESSURES	AIR	GAS
1st SECTION	6½"	6"
1st AND 2nd SECTIONS	8½"	7½"
1st, 2nd AND 3rd SECTIONS	10½"	9⅜"
1st, 2nd, 3rd AND 4th SECTIONS	12⅝"	11¼"
1st, 2nd, 3rd, 4th AND 5th SECTIONS	14"	13"

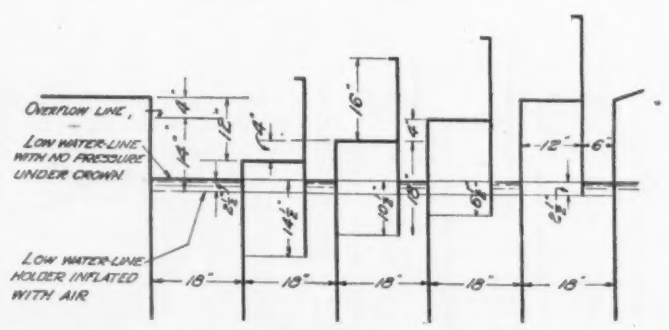

Fig. 1.

their relation to the tank water line when the sections are at rest upon the landing beams, and before the holder has been inflated for the first time. As the resulting inaccuracy is negligible the cups and grips are assumed as consisting structurally merely of lines, with the exception of the bottoms of the former. The proportions and conditions shown are typical of American practice, but the illustration does not purport to reproduce any particular holder. The tank water outside of the inner section stands at the same level as the water inside, for there is as yet no pressure under the crown other than that of the atmosphere. Each grip incloses a volume of air entrapped when the water rose above the lip of each dip plate. The pressure within the grip corresponds to the distance from the surface of the tank water to the lower surface of the entrapped air. The pressures within the grips for this phase are as given in Fig. 1.

As pressure develops under the crown the exterior tank water line and the pressure within the grip both rise by an amount corresponding substantially to the increase in pressure. When the lip of the cup of the inner lift is about to penetrate the air entrapped in its related grip the conditions are as shown by Fig. 2. The pressure of the

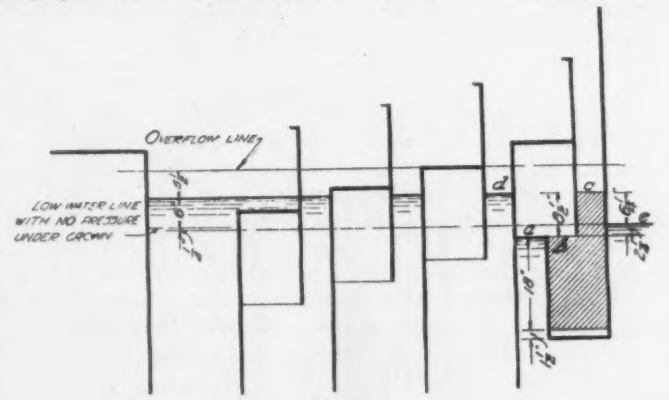

Fig. 2.

first section assumed as 6½ inches, the pressure within the grip of the second lift is 8½ inches.

The lower surface of the entrapped air is divided by the lip of the cup into 2 parts, *a* and *b*, now at a common level. This relation will soon be disturbed, but, at this and all later stages of entrapment, equilibrium requires the same pressure upon both segments of this surface; 3 water levels, *c*, *d* and *e*, are factors of this equilibrium. Reference to Fig. 2 will show that surface *a* is under pressure from a head of water 8½ inches from *d*, external to the section. This head is represented internally by the holder pressure of 6½ inches, acting upon surface *e*, plus the 2½ inches head of water from *e* to *a*, the sum being 8½ inches, as before. Surface *b* is also under a pressure of 8½ n ches, the head of water from *c* to *b*. During all stages of this en-

trapment the pressure within the grip will exceed the holder pressure by the difference between levels *a* and *e*. The ascending cup has entrapped the water indicated by the hatched area, the quantity of water thus acquired being somewhat more than the cup could hold level full.

As the lift advances beyond the position in Fig. 2, the lip of the cup penetrates the entrapped air, which is now acted upon at the surface *b* by the water segregated in the rising cup. This conflict of water and air results in both being displaced by amounts required by the laws of equilibrium. Thus, surface *a* is forced downward while *b* is retarded in rising, and *c* is accelerated by the amount that *b* is hindered; the differences between levels *a* and *d* (Fig. 3) and *b* and

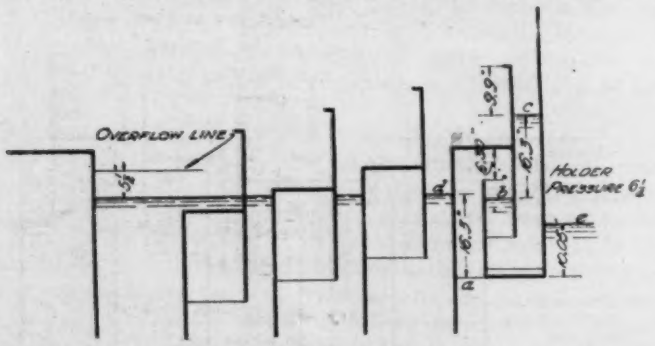

Fig. 3.

e, and the difference between *a* and *e* plus the holder pressure being constantly equal. This continues until the bottom of the ascending cup meets the falling surface *a*. When these reach a common level, as in Fig. 3, the pressure within this grip has reached the maximum for any phase of its action.

With further progress upward of the inner lift, the entrapped air begins to escape under the cup and into the interior of the holder. This results in a gradual reduction of the pressure within the grip. The surface *a* rises with the bottom of the cup, its rising signifying the continuing escape of air. Surface *b* is now accelerated in its rise by the reduction of pressure, ascending faster than the cup, while *c* is retarded, its upward motion being now but one-half that of the cup. When the cup and grip have come into passive contact this behavior is terminated, the conditions being as in Fig. 4. It will be

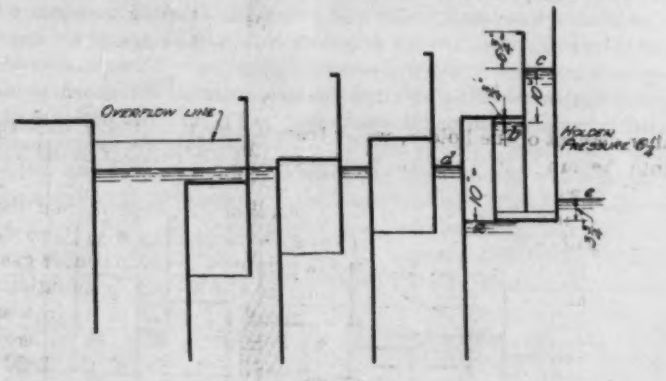

Fig. 4.

observed that the surface *b* reached a point but ¾ inch below the lip of the cup. Had the pertaining grip stood more than 1½ inches higher in relation to the tank water, the cup would have overflowed internally.

Fig. 5 illustrates the conditions when the weight of the second lift has been transferred from the landing blocks to the cup, which is assumed to have occurred without the inner lift rising perceptibly from the position shown in Fig. 4. Disregarding for the present the depression of the tank water line, caused by the withdrawal of the cup water, the surface *d* has risen 2 inches, which amount corresponds to the increase of holder pressure due to the second lift. During that brief period in which the outer tank water level *d* is rising, the surfaces *a*, *b* and *c* are again reversed in their motion, *a* rising above the bottom of the cup, thus checking for the moment the escape of air. Surface *b* falls while *c* rises, the amount of change of *a*, *b* and *c* being the same and one-third of the amount *d* rises, or ⅔ inch. The pressure of the entrapped air, which had fallen to 10 inches (Fig. 4), has now risen to 11.33 inches. As the interlocked cup and grip henceforth travel upward together the bottom of the cup

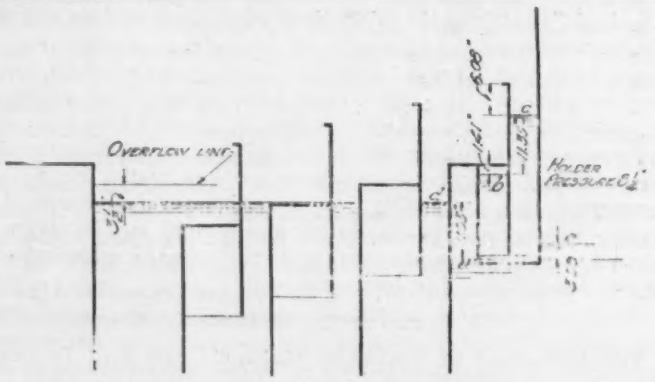

Fig. 5.

overtakes the surface *a* when the escape of air is therewith resumed. As the pressure within the grip is again falling, surface *b* once more rises faster than the cup ascends and surface *c* falls relatively, both at such a rate that, as in the previous phases, the difference of level between *a* and *d* and between *b* and *c* will be equal to the difference between *a* and *e*, plus the holder pressure. If this behavior be traced to its conclusion it will be found that, when the bottom of the cup has reached a point ¼ inch below the surface *e*, the water at *b* will have reached the lip of the cup. At that instant the surface *c* will be 8½ inches above *b*, hence, as the bottom of the cup clears the inner tank water level *e*, and the pressure in the grip equalizes with the pressure of the holder, a volume of water ¼ inch deep and 6 inches wide will overflow internally from the cup to the tank.

Fig. 6 shows the same cup, the holder fully inflated with air. The

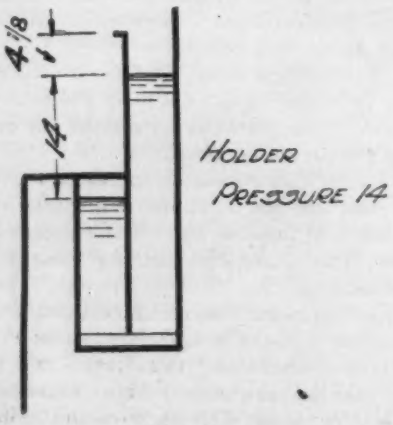

Fig. 6.

water has risen in the outer leg of the cup to 4⅛ inches below the lip of the dam. This is the nearest approach to overflowing for this particular cup under any normal conditions.

Fig. 7 represents this same cup as it is about to re-enter the tank water, the holder now containing gas. Comparing Figs. 2 and 7, while the quantity of water in the cup is but little less than acquired in the first phase of cupping, the volume of gas now entrapped in the grip is substantially one-half that of the air previously contained therein. As the holder continues its descent, the tank water acts upon the entrapped gas, causing the surface *a* to fall at but one-third the rate at which the cup is moving. Surface *b* now falls faster than the cup, while *c* is retarded, falling two-thirds as fast as the cup. Fig. 8 illustrates conditions when the second section has just touched

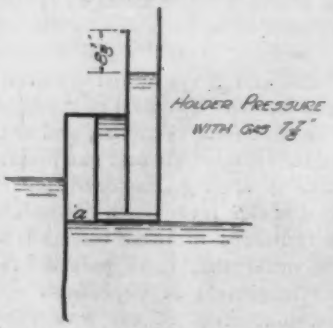

Fig. 7.

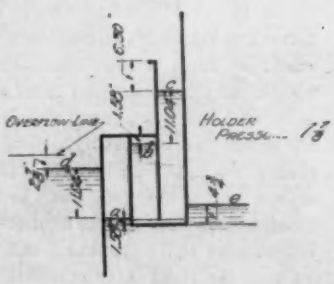

Fig. 8.

the landing blocks, but before the weight has been transferred thereto. Fig. 9 shows conditions immediately subsequent to those of Fig.

8, the section now resting upon the blocks. Comparing the positions of the surfaces, note that, when the section landed, the exterior tank water level *d* fell 1¾ inches, corresponding to the reduction of holder pressure, *a* and *c* both fell, and *b* rose, each one-third of 1¾, or ⅝ inch, while *c* remains unchanged. As required for equilibrium, the differences of level between *a* and *d* and between *b* and *c* are both equal to the difference between *a* and *e* plus the holder pressure.

With further descent of the inner section the cup separates from the now stationary grip, thereby reducing the pressure on the entrapped gas. As the pressure within the grip is measured during all phases of entrapment by the difference of level between *a* and *d*, the surface *a* must now rise. The volume of gas contained in the grip being constant, the surface *b* falls at the same rate and the same amount that *a* rises. This rate of motion is but two-thirds of that at which the cup is descending, hence, as the volume of water in the cup is now constant, the fall of the surface *c*, as compared to the motion of the cup, is accelerated to the same extent that *b* is retarded; that is, *c* falls twice as fast as *b* and double the amount. It will be observed from the relation of surface *b* to the lip of the cup in Fig. 9, that, as the holder is descending faster than *b* falls, the water will soon reach the lip of the cup as shown in Fig. 10, and, with further

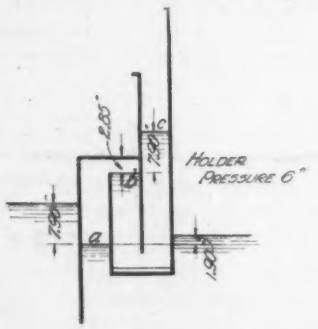

Fig. 9.

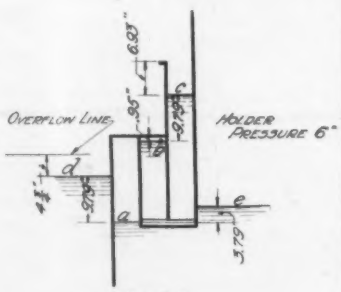

Fig. 10.

movement, the cup will overflow internally. This modifies the behavior of gas and water, *a* now rising at the same rate and the same amount that the cup descends, while the downward motion of the surface *c* is twice that of the holder. Fig. 11 shows conditions when *a* and *e* reach a common level, and the gas within the grip, though still entrapped, is under a pressure equal to that of the holder.

Fig. 12 shows the uncupping completed. The surfaces *a* and *b* are now rejoined, *c* and *d* are at a common level and will not be disturbed by the further downward movement of the inner lift, except to the small amount that both rise as a result of water being displaced by submerged metal. Comparing Figs. 2 and 12, note that the cup has lost a volume of water 6 inches wide and 7⅛ inches deep, that the gas entrapped in the grip is but 9¾ inches deep as against 18 inches of air originally contained therein, and that there is but 1 inch of pressure on the gas in the grip.

Fig. 12 also shows the conditions when, during the next inflation

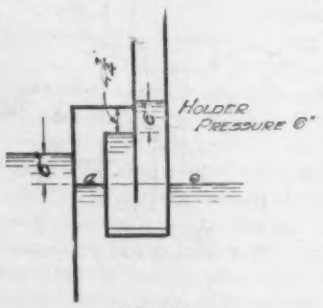

Fig. 11.

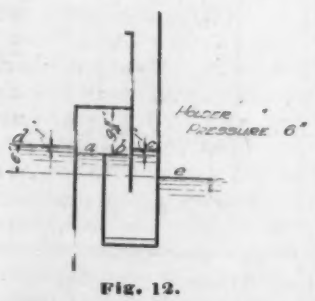

Fig. 12.

of this holder, the lip of the cup reaches the lower surface of the entrapped gas. The succeeding phases of this cupping are uneventful, the phenomena resembling those of the first inflation, though now none of the entrapped gas escapes and the pressure within the grip is at all times much less, reaching its maximum when the weight of the second lift is taken from the landing blocks, as shown by Fig. 13.

After this inflation, when the holder again descends, the quantity of gas entrapped in the grip is somewhat more than upon the previous occasion (see Fig. 14) and compared to those in Fig. 7. With the continued descent of the holder the surfaces *a*, *b*, *c*, *d* and *e* repeat the behavior of the previous uncupping until the phase corresponding to Fig. 9 is reached. Conditions at the instant in which the weight of the second lift came on the landing blocks are shown by Fig. 15. Comparing Figs. 9 and 15, which represent corresponding phases of the descending holder, observe that, while the volumes of water and gas in the cup and grip are incidentally different, the pressure of entrapment is the same. Thus it may be deduced that the pressure of entrapment developed in the cup and grip of a descending holder is a direct function of the holder pressure, and the amount the lifts have moved downward since entrapment began, and independent of the volumes of water and gas the cup and grip may contain.

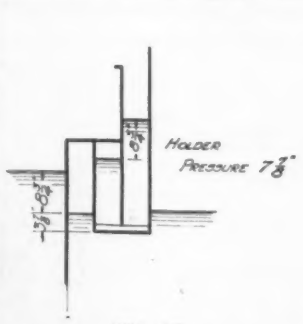

Fig. 13.

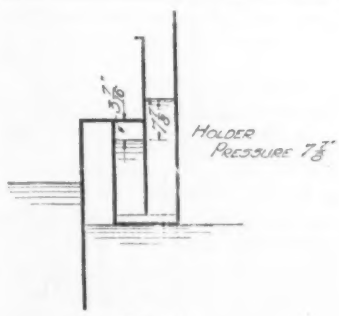

Fig. 14.

The grip being again stationary the cup now separates from it, with a brief recurrence of the phenomena described as following the conditions represented by Fig. 9. As there is now more gas in the grip, and less water in the cup than at the time of the previous uncupping, there will result a change in the behavior described in Figs. 10, 11 and 12. As before, the surface *a* is rising and *b* falling at a rate two-thirds of that at which the cup is moving. However, as the surface *a* and the lip of the cup are moving in opposite directions, the rate of approach being the sum of their respective rates of motion, or 2½ times the rate at which the lip is overtaking *b*, the lip will now meet the surface *a* before it can overtake *b*, Fig. 16. Hence, with the further descent of the holder, water from the tank will flow over the lip into the cup until *a* and *b* are rejoined and *c* is restored to the level of *d* below which it had fallen.

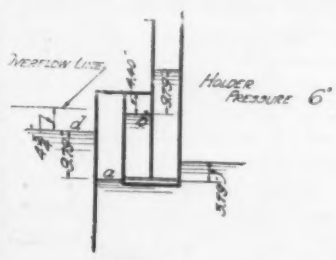

Fig. 15.

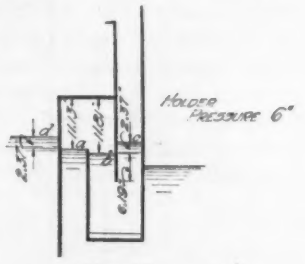

Fig. 16.

Fig. 17 illustrates both the final phase of this cupping and the beginning of the next one. Comparing the conditions with those shown by Fig. 12, it will be noted that the grip now contains more gas and the cup more water than at the time of the preceding inflation. In this connection it is convenient to direct attention to an interesting but unimportant phenomenon. By comparing Fig. 14 as showing the last descent, and Fig. 17 the present inflation, of the holder, it will be observed that, as the cup now contains more water, there will be less gas entrapped when the holder next descends. Comparing now Figs. 12 and 17 it will be apparent that the smaller volume of entrapped gas will result in less water in the cup when the holder next rises, which in turn will permit more gas to be entrapped upon the next descent. It could be shown that this cycle of more water less gas, less water more gas, continues *ad infinitum*, but the increment of variation is constantly diminished; and, after 4 or 5 inflations of the holder, becomes less than could be discovered by observation. After the gas and water have assumed their final volumetric relation the conditions during uncupping vary but little from those shown by Figs. 14 to 17, inclusive.

As the action of the intermediate cups involves no notable phenomena they will remain unconsidered and the behavior of the outer cup will now be analyzed.

Fig. 18 illustrates the conditions that exist when the fourth section rises out of the tank water for the first time while the holder is being inflated with air. During this phase the distance from the surface of the outer tank water, *d*, to the overflow line, is 0.57 inch less than

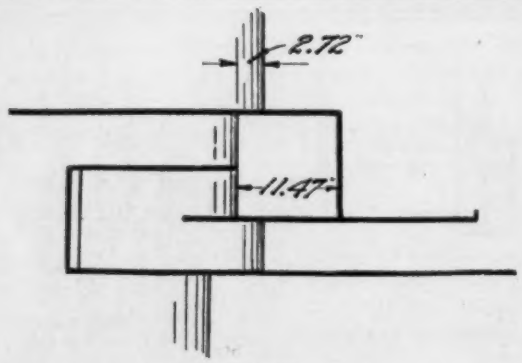

Fig. 17.

the increment of pressure for the fifth section, and the inner surface, *e*, will still stand above its final level, both *d* and *e* being affected by the displacement of the cup water and the metal still submerged. For simplicity, however, this increment of displacement is not considered in developing the action of this particular cup, for its influence is unimportant. Attention is directed to the pressure of 24¼ inches on the entrapped gas as compared to 8¼ inches for the corresponding phase of the inner sections, as shown by Fig. 2. It will also be noted that the quantity of water entrapped by this cup is greatly in excess of that with which the first cup began its activity.

With the continuing rise of the fourth lift there begins a repetition of behavior, described in connection with the first cupping of the first and second sections, as following the conditions shown by Fig. 12. Now, as then, the surface *a* will fall and *b* will rise, each at a rate two-thirds of that at which the cup is moving, while the surface *c* will rise twice as fast as *b*, or one-third faster than the cup. The greater amount of water segregated by this cup quickly results, however, in a variance from the phenomena of the inner sections. In this case the surface *c* will reach the top of the dip-plate before *a* meets the bottom of the cup, as shown by Fig. 19. As the holder

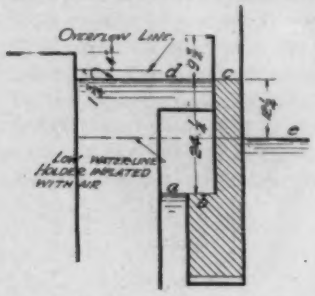

Fig. 18.

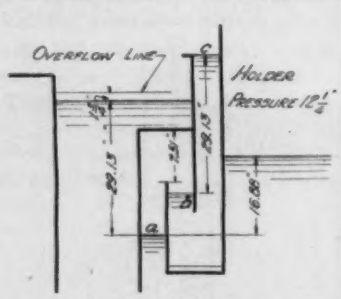

Fig. 19.

continues to rise water will overflow from the surface *c* into the tank. Surfaces *a* and *b* and the pressure in the grip will now remain stationary until the botton of the ascending cup reaches *a* when the entrapped air will begin to escape into the interior of the holder. The conditions obtaining at that instant are as shown by Fig. 20. Surfaces *a* and *b* will now ascend at the same rate as the holder, *a* remaining level with the bottom of the cup, while *b* remains 9½ inches below the lip of the cup. It is thus obvious that during this phase the volume of air escaping from the grip at *a* is equal to the volume of water overflowing the dip plate from *c*. This behavior continues until the ascending holder begins to assume the weight of the outer section. As this occurs the outer tank water level correspondingly rises, causing the surface *a* to advance above the bottom of the cup, thus stopping the escape of air, the overflow of water from the cup being meanwhile increased. Fig. 21 shows the conditions that ob-

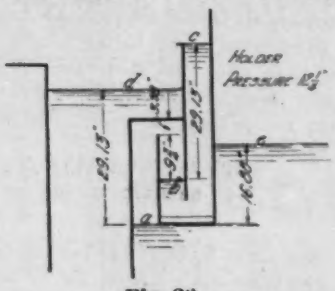

Fig. 20.

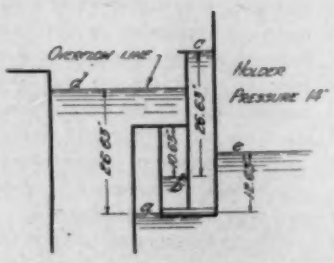

Fig 21.

tain when the weight of the outer section has been entirely transferred from the landing blocks.

As the now interlocked cup and grip proceed to ascend there is a repetition of the behavior previously described as occurring in the interval between Figs. 3 and 4. The head of water against the entrapped gas undergoes a progressive reduction. This requires a corresponding reduction in the difference of the level between *b* and *c;* that is, *c* must fall and *b* rise with the result that *a* will again coincide with the bottom of the cup and the escape of air will be resumed. Herewith *b* ascends still more rapidly until the bottom of the cup reaches the inner tank water level *e*, when the entrapment is terminated and the pressure in the grip becomes that of the holder. Unlike the innermost cup, during this last phase no water will escape over the lip of the cup when the pressure in the grip falls to that of the holder. Comparing Figs. 18 and 22 it will be noted that the cup has lost a column of water 6 inches wide and 11¼ inches high.

After the outer lift has ascended and descended several times and the holder has been purged, the quantity of water in the cup and the volume of gas entrapped in the grip will have become that shown by Fig. 22, which represents the normal operating condition for this cup. Comparing Figs. 21 and 22, it will be noted that this cup now contains more water than at the time of the first ascent, the reverse of what occurs in the case of the innermost sections. Passing over the intermediate phases of the descent following Fig. 22, to the moment when the weight of the outer lift has been transferred to the landing blocks, the conditions have become as shown by Fig. 23. The outer

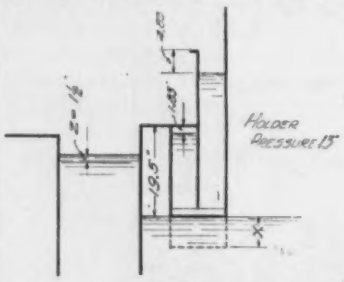

Fig. 22.

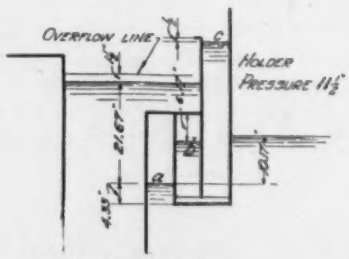

Fig. 23.

lift being now at rest, the descending cup will part from the grip, the surfaces *a*, *b* and *c* repeating the phenomena described as occurring in the interval between Figs. 15 and 16. The falling cup carries downward the water contained therein, thereby reducing the pressure on the entrapped gas. Hence, surface *a* must rise, for the difference of level between *a* and *d* and between *b* and *c* must at all times be equal. As developed in connection with Figs. 15 and 16, the rising surface *a* approaches the lip of the falling cup at a rate 2½ times that at which the lip of the cup is overtaking the falling surface *b*. When the cup has fallen 9.10 inches from the position shown by Fig. 23, water will begin to overflow from *a* to *b;* that is, from the *tank to the cup*. The beginning of this phase is represented by Fig. 24.

The normal conditions that exist when the cupping of the outer sections begins are as shown by Fig. 25. The intermediate phases

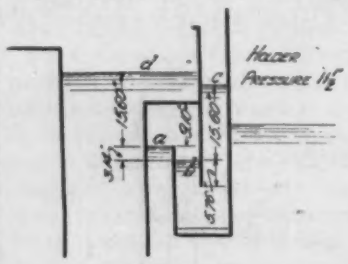

Fig. 24.

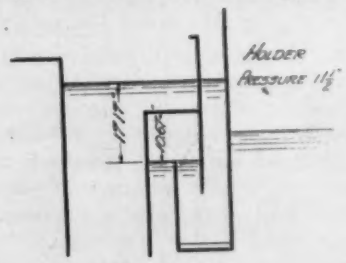

Fig. 25.

being now irrelevant, the conditions pertaining to the moment when the weight of the outer section has been entirely transferred from the landing blocks are next considered, and are as represented by Fig. 26. The pressure within the grip is at its maximum for operating conditions, and the overflow of the cup has ceased for this inflation. Comparing Figs. 25 and 26, it will be observed that, with every normal cupping of these sections, a column of water, 6 inches wide and 7.84 inches high, will overflow from the cup surface *c* to the outer tank surface *d*.

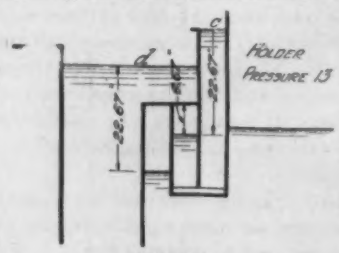

Fig. 26.

There has now been completely developed both the preliminary phases of the cup action and the normal behavior under the ultimate

operating conditions of the inner and outermost cups of this hypothetical holder. Though of identical dimensions, the behavior of the two cups is notably different. The inner cup carries a somewhat smaller quantity of water than the outer cup, as may be observed by comparing Figs. 14 and 22. However, it meets the crucial test of cup action with even greater efficiency than the outer cup, as may be noted by comparing Figs. 16 and 24, and it will perform its proper function as a hydraulic seal, though the water level in either the cup or the tank *or in both* may have fallen below such limits as are usually permitted.

Referring again to Fig. 16, it will be observed that, in the final phase of uncupping in which the tank water overflows from *a* to *b*, the difference of level between the two surfaces is but 0.68 inch, while the distance from *b* to the lower edge of the dip-plate is 6.19 inches. The significance of this relation is that, as the oily scum which accumulates on the surface of the inner tank water overflows from *a* to *b*, the fall of 0.68 inch is too slight and *too momentary* to cause or permit the scum to sink below the dip-plate and rise to the surface *c*. Were the cup to descend deficient in water, to an amount of 2 inches, while still efficient as a seal against the escape of gas, its action would result in the oil passing around to the surface *c*. With the continued descent of the holder this scum would act upon the paint on the outer surface of the inner lift in a manner too familiar to require any further identification.

The corresponding behavior of the outer cup at this phase is shown by Fig. 24. The water and scum overflowing from surface *a* into the cup are more in quantity, have a greater fall, and continue the disturbance of the cup water longer than occurs in the uncupping of the inner sections. Thus the oil passes down under the dip-plate and rises to the outer surface of the cup water, *c*. When the holder is next inflated the scum upon the surface *c* overflows the top of the dip-plate onto the surface of the outer tank water, *d*. The termination of this phase is shown by Fig. 26. Thus, as the continuing rise and fall of the holder may be of such amounts as to result in the frequent cupping and uncupping of the outer lifts, this cup will act as a very efficient pump, withdrawing the oil from the surface of the interior tank water and depositing it upon the surface of the outer tank water. The faulty action of this one cup results in the disfigurement of two lifts.

The difference between the behavior of the inner and outer cups is the consequence of respective differences of two of the conditions that exist at the time of cupping and uncupping. The outer cup acts under a much greater holder pressure than the inner cup, and the outer grip is more deeply submerged in the tank water than the inner grip. While the holder pressure cannot be accommodated to the cup action the submergence of the grip can, and thereby the transference of oil from the interior of the holder may be avoided. By assuming the volume of entrapped gas to remain that shown by Fig. 25, an equation may be written, for the amount the level of the tank water must be lowered to permit the lip of the falling cup to overtake the surface *b* at the same instant that it meets *a*. This equation is:

$$3\,(1.83 + \frac{X}{3} - \frac{Z}{3}) = \frac{3}{5}\,(19.5 - \frac{X}{3} + \frac{Z}{3}).$$

reference being made to Fig. 22 for the meaning of the terms. Solving for X it may be deduced therefrom that, if the level of the tank water be lowered some 9 inches, the transference of oil through the cup will be avoided under normal conditions. While the lowering of the tank water would not affect adversely the action of the inner cup, it would permit the entrapped gas to escape from the grip every time the inner lifts were completely uncupped. It could be shown that, if the level of the tank water were lowered 7 inches, a material improvement of the action of all of the cups would be accomplished thereby. In the construction of new holders such a relation of the grips to the tank water level as that illustrated by Fig. 1 should be avoided. If the sections are to vary in height the outer lifts should be the higher.

Though cups may be designed to perform their functions perfectly under *normal* conditions, a deficiency of 2 or 3 inches of water in a descendiog cup may result in the escape of oil from the interior of the holder. A margin of security against such an occurrence may be provided by perforating the cup plate, the location of the holes to be such that no water can escape from the cup. The conditions pertaining to the outer cup may require the holes to take the form of serrations in the lip of the cup, and they must have sufficient area for the two surfaces *a* and *b* to merge without turbulence.

Practical Effects of the Michigan Workmen's Compensation Law Especially as it Affects Gas Companies.

[A paper by Mr. A. G. SCHROEDER, Detroit Meeting, Michigan Gas Association.]

At the time this paper is being written the "Michigan Workmen's Compensation Law" has been in effect for not quite one year, but from its workings in this limited period, it is apparent this legislation is of tremendous importance; it is possibly the most important single piece of legislation ever placed on statute books. To obtain a clear understanding of just why it is so important, and to point out its practical effects on employers in general and on our Michigan gas companies in particular, it is necessary to review to some extent the conditions that prevailed in this State, as concerns industrial accidents, prior to the date on which the law went into effect.

Industrial Accidents Under the Common Law.—Previous to September 1st, 1912, compensation, or indemnity for physical injuries suffered through accidents incident to the employment of labor, was governed by common law principles. American common law is based on the English common law and consists of an accumulation of legal principles, customs and court decisions, developed and compiled in the course of centuries, coinciding with and following closely the development of the Anglo-Saxon race. As distinguished from the common law we have statutory law, or the law as expressed by the legislating body. In the absence of any statute the common law alone applies. Under the common law, no employer could be held liable for injuries resulting from an accident in his establishment, if he could show: First, that the employee was negligent; or, second, that the injury was caused by the negligence of a fellow-workman; or, third, that the employe had assumed risks inherent in, incidental to, or arising out of, his employment or arising out of the failure of the employer to provide and maintain safe premises and suitable apparatus. With the growth of modern industrial conditions, and the rapid increase in use of machinery, there were many accidents in which an employee, injured through no fault of his own, would be unable to recover any damages. Where there were no statutory provisions to define what would be reasonable indemnity, there was opportunity for unscrupulous lawyers to trump up cases on contingent fees whereby they and the employee would divide whatever was obtained from the employer or insurance company in settlement or through a suit. Another unfortunate condition under the common law, was the spirit of antagonism often kindled between the employer and employee in the event of an accident. The employer, in order to guard himself against excessive damage suits, usually carried liability insurance and, therefore, the settlement of the case was practically out of his hands. By the provisions of his policy he was forced to cut the man out of his payroll immediately, and must be careful in all his dealings with the injured lest he admit a liability. He might desire to assist the employee in a meritorious case, but would not know just how such assistance could be given; and, in order to be safe, usually allowed the insurance company to handle the matter. On the other hand, an employee would often feel he had opportunity to obtain large damages and would resent the employer's action in cutting off his wages, and, as a result, there would be an antagonistic feeling just at the time the employee and his family were in need of sympathy and care, and the employer in need of relief from worry as to the outcome of the case, especially if he should be unfortunate enough to have carried no insurance or an inadequate amount. Then, finally, when settlement of some kind was made, only a small portion of the money would go to the injured employee. Statistics show that, as a whole, not to exceed 36 per cent. of the amount of premiums paid for liability insurance was paid out for losses by the indemnity companies. All of the balance, excepting a not unreasonable profit, was absorbed in soliciting business and the expense of litigation. In other words, two-thirds of the money paid by the employers, and considered by them as their cost of industrial accidents, did not reach the injured person.

In recent years, especially during the past 5, a great deal of consideration has been given the matter of industrial accidents. There have been 2 great corelated movements connected herewith. First, the general campaign to show the necessity of the prevention of accidents, the slogan of this movement being, "Safety first." The second movement was for the passage of laws to put an end to the generally unsatisfactory conditions under the common law methods of obtaining compensation for accidents, and to fix the indemnities that would apply in industrial accidents. It has become recognized that,

(*Continued on page* 314.)

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NEW YORK, MONDAY, NOVEMBER 17, 1913.

BRIEFLY TOLD.

THE PHILADELPHIA CONVENTION, N. C. G. A.—That the concerted efforts of those in direct charge of the preliminaries respecting the Ninth Annual Convention (to be held in Philadelphia, December 2 to 6) of the National Commercial Gas Association are to meet with returns, not only of a responsive sort, but of an "exceeding great sort," may not truthfully be denied. Indeed, the certain indications are that its Ninth Convention in the Quaker City will prove to have been its greatest one; and that assuredly is saying much, remembering that each of its predecessors can be tested for worth through the cold records thereof. The convention this year will be especially noteworthy in respect of the display that will be made along appli ance lines. This display, which will be comprehensive to almost completeness, requires the entire floor space of two large floors in a modern building to maintain it properly; in fact, although the magnificent display made last month, at Shepherd's Bush, London, in connection with the doings of the English Commercial Association, may have been on a larger scale—and on a magnificent scale that certainly was—but, in any or all events, the Philadelphia as semblings will sturdily bear comparison with their London example. The JOURNAL devoted much space to that by special correspond ence, prepared respectively by one of the foremost gas engineers and managers in England (Mr. Norton H. Humphrys) and another contributor (who prefers that his identity be concealed), and their narratives show how the Shepherd's Bush affair was conducted, on what scale it was maintained, and how successful it had been in its general effect upon the industry. And to complete the reference thereto, in this issue will be found some pertinent remarks made during the Shepherd's Bush session, by Mr. Oscar H. Fogg, head of the special "Department of Utilization," Consolidated Gas Company. Despite his name, that gentleman is neither misty nor even cloudy when it comes to him to say or do something connected with advancing the industry; and his speech will be found worth conning. He was a tower of strength to both the American Gas Institute and later to the National Commercial Gas Association; and his individuality is such that his visit to Europe will virtually result in the cultivation of much closer relations between the commercial division practitioners and representatives in the two countries. Mr. Fogg has "a message from England" to deliver, so there will be added cause for a visit to Philadelphia. In connection with the latter great center of population 'tis at its best in the late fall and early winter time, and one has the further incentive to be present in the knowledge that Philadelphia's proverbial hospitality will be accentuated through the agency of the U. G. I. Company and its many men. Read the advertisement (it appears on page 11, current advertising pages) carefully, and those who so do, will likely find a way to assist in the Philadelphia Convention both by presence and voice.

EDUCATION OF EMPLOYEES.—That the value to be had from educating their employees is recognized by gas companies generally is evidenced in the interest of the company-members in the educational courses of the National Commercial Gas Association. Almost 3,000 students are now enrolled for the course on "Utilization of Gas Appliances," and its possibilities are evident. Corporations go further than in providing purely technical studies for their workers, and include those along general lines. A good example of this is shown in the plan of the Brooklyn Edison Illuminating Company, any one of whose many employees may select any course at any school or college in New York City which will be of assistance in his or her work with the Company, and have the tuition fee, subject to approval of the Company's scholarship committee, paid in advance by the Company, the amount to be deducted in weekly instalments sufficient to pay for the course at its completion. If, at the end of the term, the employee passes examinations with a grade of 66 per cent. or better, the whole amount deducted will then be returned, the Company defraying the cost of instruction. Where an employee severs his connection with the Company during the school year the amount paid for tuition, less the sum already deducted, will be taken from his salary. Exception is, of course, made in the case of employees required to take up other duties, owing to transfers within the Company. Last year 136 employees (male and female) signified their intention of taking courses of instruction under these conditions. Of this number 113 started, and 51 of these completed the courses successfully.

NEW JERSEY STATE GAS ASSOCIATION.—The fall meeting of the New Jersey State Gas Association was held Wednesday last, in the Assembly Room, the Public Service Building, Sip avenue, Jersey City, President, C. F. Butcher, calling the assembly to order at 2:30 P.M. Omitting the reading of last meeting's minutes, Secretary O. F. Potter, called the roll of members, which revealed an attendance of nearly 50. The first talk was by Mr. Calkins, of the advertising firm of Calkins & Holden, who will handle the campaign of the National Commercial Gas Association. Mr. Calkins pointed out the necessity of the movement to educate the public and remove its prejudices against gas and gas companies. His remarks were discussed by Messrs. Butcher, Stotz, Hanley, Brock, Peffly and Conroy, all of whom had good words to say for the general scheme. Following this were four "Ten-Minute Talks;" the first, by Mr. J. F. Buck, on "The Solicitor;" the second, by Mr. Garrison, on "Street Lighting;" the third, on "New Business," by Mr. Hanlan; and the last by Mr. Cohen, on "Sincerity in Salesmanship." All of these were worth while and provoked fair share of discussion. President Butcher asked the members to suggest topics for the next meeting, and appointed a committee on papers to handle the matter. Secretary Potter made some routine announcements, and Mr. Dains told of the plans of "The Gas Meeters" for Thursday of convention week in Philadelphia. After which the thanks of the Association were voted to the Public Service Company for its hospitality, and the meeting was adjourned. Before leaving that very well-equipped building, most of those in attendance availed themselves of the opportunity to go over it, and see the complete lines of applia nces diplayed.

THE KEY WEST GAS COMPANY'S EMPLOYEES' ASSOCIATION.—The Key West Gas Company's Employees' Association regular Fall and Winter meetings have been resumed, after the Summer suspension And if the attendance and enthusiasm at the first evening afford a criterion of the Association's standing, it is bui lt on a firm foundation. Mr. Lee Stanley, President of the Association, called the meeting to order and, in well chosen words, greeted the new members Mr. H. A. Virchow, taking as his subject "Courtesy," spoke at length on its value to a gas company. Mr. L. B. Lovell contributed a paper on "Salesmanship," showing careful preparing. It covered this large subject in a manner fully appreciated by his aud ence. Manager S. P. Vecker, taking for his subject "Where Do I Belong," pointed out that few men having definite aims nevertheless have some ideas as to what they want to do, but never aim to see that these ideas developed. That success was only to be obtained by hard work; that too many men wanted to go to the theater without paying the price of admission—work. That business was li ke any other game. It had its rules, and if one desired to be successf ul it was necessary to train, and that business training meant proper eating, proper sleeping and a right way of living. Sundry routine work having been passed upon, the meeting adjourned.—M. K. W.

PUBLICITY DEFEATS MUNICIPAL OWNERSHIP PROPOSITION.—"Another all-around defeat for municipal ownership was scored November 4th at Grand Junction, Colorado, when the voters overwhelmingly rejected 3 separate proposals for municipalizing the local public utilities. One proposition was for the purchase or construction of an electric plant; another was for the purchase or construction of a gas plant; a third was for the purchase of all the properties of the Grand

Junction and Grand River Valley Railway Company, including gas, electric and railway departments. The movement for municipal ownership had been carefully fostered for nearly 20 years and merely awaited a favorable opportunity for its presentation. The campaign in favor of municipal ownership was conducted by a man said to be one of the most powerful politicians in Western Colorado and had the endorsement of the entire city administration in addition. The opponents of municipal ownership secured the services of Glenn Marston, of Chicago, who outlined for them a campaign which resulted in the rejection of all the municipal ownership schemes. The outcome of this election shows clearly the present trend of public sentiment against municipal ownership, as the various propositions submitted to the voters included all degrees, from the ownership of an electric light plant alone to the complete municipalization of all the utilities. It is interesting to note that the greatest vote against municipal ownership was that on the question involving the municipalization of the entire property of the Grand Junction and Grand River Railway Company, showing a large degree of public confidence and satisfaction with the management of that corporation.—G."

CURRENT MENTION.—

THE strengthening of the engineering staff of the H. Koppers Company by the recent naming to the Second Vice Presidency of Mr. C. J. Ramsburg has been further increased by the election to the Third Vice Presidency of Mr. Heinrich J. Freyn, whose former excellent accomplishings, as Consulting Engineer to the gas engineering division of the Allis-Chalmers Company, of Milwaukee, Wis., are well known to the gas fraternity. Of course, Mr. Freyn's headquarters will be in the Mallers' Building, Chicago.

MR. O. A. MERCHANT, JR., since 1911 Manager of the Philadelphia Suburban Gas and Electric Company, Coatesville Division, has been transferred to the Bangor (Maine) Gas Light Company, there to act in a similar capacity. Mr. A. P. McCarthy, who has been connected with the Philadelphia Suburban Gas and Electric Company, in the headquarters at Chester, Pa., has been named to take charge at Coatesville.

WE are indebted to the attention of Mr. A. M. Smith, Treasurer, The Gas Machinery Company, Cleveland, O., for a copy of its latest "Bulletin," No. 567, the title of which is "By-Product Coke Ovens for Steel Works, with Gas as a By-Product: For Gas Works with Coke as a By-Product." Send for a copy thereof, even it does savor somewhat of advertising. That feature of the pamphlet is not in any sense obtrusive or offending, and we have not a bit of hesitancy in declaring that the pamphlet is well worth reading, and placing it then where it may thereafter be handily reached.

"B. R.," under date of the 10th inst., sends this, from Springfield, Mass.: "Under its new management the business of the Amherst (Mass.) Gas Company has materially increased. Under the impetus of the new electric lighting current schedule (now, 13½ cents; old 16 cents per k.w.h.), the increase in electric meters set equalled 93.7 per cent. in two years. In 1911 the number was 558; now it is 1,081 October 20, 1911, the Company had 156 gas meters in service; October 20, 1913, the number had reached 534—meanwhile the selling rate was reduced to $1.40 per 1,000, from $1.60 per 1,000. The Company now employs 40 men; 3 years ago the staff numbered less that 15."

"AT the November meeting of the Wilmington (Del.) Gas Study Club, which session was held in Workman Hall, the evening of the 4th inst., 55 members were present. The paper of the evening, in which was detailed 'The Early History of Gas in Wilmington,' was presented by Mr. Thomas F. Curley, Superintendent of works, son of the late Mr. Thomas Curley, the first Superintendent of the Company. The officers elected to direct the Club's affairs during the year were: President, J. F. Spence; Vice-President, Norman Carson; Treasurer, G. H. Lackey; Secretary, A. L. Baldwin.—Member."

ON the 6th inst., drafts of the underlying franchise for the operation of a gas and electric light plant in Houston Heights, Tex., were discussed at a meeting of the City Council. These were petitioned for by Mr. S. J. Dill and associates, of New York, who asked that the life of the franchise be put at 50 years. The matter will be finally submitted to a vote of the people, at an election to be held the 18th prox.

"B. L. R.," writing from Waterloo, Ia., under recent date, says; "I enclose you this list of changes in respect of the personnel of the staff of the Citizens' Gas and Electric Company, to become effective as of December first: Ira L. Craig, Electrical Engineer here since 1908, has been appointed Assistant to Mr. H. M. Blake at the Philadelphia plant. Mr. Craig came here direct from Cornell, N. Y., on his graduation from that University in 1908. Mr. H. M. Smith, Superintendent of the gas division, has been advanced to the post of General Superintendent of both the gas and electric divisions. Mr. J. P. Jones, since 1901 connected with the Company at Cedar Falls, Ia., and in full charge at that point since 1908, takes charge of the Company's business in Waterloo, acting, of course, under the direction of Mr. Smith. Mr. Jones is a graduate of Ames College. Mr. Frank McSweeney, since 1904 in the employ of the Company, goes to Cedar Falls to assume the responsibilities heretofore maintained by Mr. Jones. Mr. M. C. Christensen, sent to Cedar Falls at the time of the consolidation of the two plants, succeeds Mr. McSweeney as storekeeper."

THE Town Clerk of Warren, R. I., has been instructed to notify the Public Utilities Board that, inasmuch as the Bristol County Gas and Electric Company does not keep separate accounts of the expenses, costs and profits derived from the sale of gas and electric currents, respectively, "The Council, and other residents of Bristol County, pray" that the Company be requested to answer to charges of delinquency in respect of accountings, etc., "to the end that a fair price for the supply of gas and electric currents may be determined and enforced."

GENERAL MANAGER V. L. ELBERT, of the St. Joseph (Mo.) Gas Company, has notified the residents that, during this month, they will be obliged to pay $1 per 1,000 cubic feet for artificial gas used to eke out the natural gas supply.

"T. L. R.," writing from Madison, Wis., under recent date, says upon a stipulation of facts, signed by both parties in interest, the Industrial Commission ordered the Milwaukee Gas Light Company to pay to Ann O'Rourke the sum of $2,400 in equal monthly instalments, $30 to be paid within 10 days and $30 the first of each month thereafter, until the entire sum is paid. The award was to compensate Mrs. O'Rourke for the death of her husband, who, injured while in the employ of the Company on September 19th last, died from the effects of the injury September 17th.

AT the October meeting of the Board of Directors, the Portland (Me.) Gas Light Company, the following resolutions were adopted to the late Mr. Elias Thomas:

"Our late associate, Mr. Elias Thomas, participated in our last meeting, manifesting his usual interest in the proceedings of this Board. A few days later we were shocked by the news of his death.

"Mr. Thomas was long a Director of this Company, and was earnestly devoted to its progress and prosperity. Were we to specialize as to his varied usefulness, where all was valuable, it might be said that his service as a Director was especially characterized by his insistence that every act of this Board should be justified by sound business principles, with a view to increasing the usefulness of the Company to the community it serves and upon which it depends. So extensive was his experience, so conservative was he in thought and action, so sound was his judgment, that it is not too much to say that every member of this Board came to believe that contemplated steps which commanded his approval might wisely be taken.

"Sharing with all our fellow-citizens of Portland in the loss which this community sustains by his death, we yet, because of our association with him here, more keenly realize the weight of the blow that in his loss has fallen upon us all.

"That those who come after us may know of our regard for him, the Clerk is directed to spread the expression of our confidence and esteem upon the records of the Board."

THE new $1,250,000 plant of the Portland (Ore.) Coke and Gas Company, in the Linton district, is in commission, and the old works are to be dismantled. The plant is up to a daily output of 20,000,000 cubic feet.

MR. E. L. RIEHA, of Baltimore, who is to construct the gas plant at Orangeburg, South Carolina, has approved the site chosen, and actual construction work will be commenced immediately.

"THE dark days of October last will long be remembered by the people resident of Lynn, Mass., for many a year to come," so wrote a contributor to the Lynn *Item*, of recent date. And he also wrote: "It was figured by one meteorologist that where, if he had been unclouded, the sun should have given us 232 hours of light rays, as matter of fact all we got of the brightness and warmth, amounted to 22 hours, and in the first 20 days there was only one really pleasant, and that the 13th, or the day during which we were celebrating the anniversary of the landing of Columbus."

THE darkest October day in Lynn was the 14th—the gloom between the hours of 1 to 5 P.M. being really oppressive. Ordinarily the electric lighting load of the Lynn Gas and Electric Company stands at 20,000 k.w.h., at 1 P.M., but at that hour of the day in mention it registered 25,000 k.w.h.!

(*Continued from page* 311.)

except in cases of wilful negligence or misconduct, an employee should not be expected to bear the burden of his injury, but that this should be assumed by the industry which made a profit from his employment. With other States, Michigan took up this matter, and at the 1911 session of the Legislature a commission was authorized and appointed by Governor Osborne to make an investigation and to recommend a suitable law. On this commission both employer and workman were represented, and the law as drafted seemed to meet with general approval. To quote from the bulletin issued by this commission, the theory on which the law is based is as follows:

"That, when a worker is injured, the loss to him was occasioned by the industry, and that the products of the industry should be charged with that loss and should be paid by them." The principles of the law are these: First, that injured workmen may receive justice; second, that employers may have fixed liabilities and escape from the embarassment and expense of damage suits; third, that the courts may be relieved of trying damage suits; fourth, that the public treasury be relieved of the expense of damage suits; fifth, that the public be relieved of caring for the victims of industrial accidents; sixth, that more harmonious relations be promoted between employers and employees. In drafting the law it was the aim to provide reasonable compensation, at minimum cost, for all accidents not the result of wilful fault; certainty of amount; certainty of payment; payment without litigation; prevention of accidents.

One distinguishing feature of the law is that it provides benefits for every injury, regardless of fault or negligence, except when wilful. However, the employee really bears a part of the cost of compensation, because, while under the common law, damages (if any recovery was had) were assessed on the basis of 100 per cent. of his earnings, the compensation law pays the injured employee, beginning with the third week of his disability, only 50 per cent. of his last earnings. The employee also contributes, in the sense that he obtains no compensation for the first 2 weeks of disability, unless the total incapacity should extend to 8 weeks. The following extract from the report submitted to the legislature is of interest: "We have made no provision for contribution by employees to funds necessary to pay compensation accruing under this act. While it has been said with much force that such contribution, however small, by employees would tend to give them a feeling of added responsibility, and as this law covers accidents arising from their carelessness as well as from industrial dangers, they ought morally to share the burden, yet, after full consideration of this subject, we have reached the conclusion that it is not wise to recommend they be required to so do. In reaching this conclusion we have in mind that employers may, to some extent, add the amount of such payment to the cost of production, which, of course, could not be done by the employees except by demanding an increase of wages to that amount. Finally, we think that the physical injury and suffering of the employee are quite sufficient to constitute his portion of this industrial burden."

The important features of the law as it relates to compensation are briefly as follows:

Surgeon and Hospital Service.—During the first 3 weeks after injury the employer shall furnish, or cause to be furnished, reasonable medical and hospital services and medicines.

In Case of Death.—Payment of ½ average weekly wages, but not more than $10 nor less than $4, for a period of 300 weeks. Maximum payment possible, $3,000.

Injury Involving Total Disability.—One-half of weekly wages, not more than $10 nor less than $4 during the extent of total disability, for a maximum period of 500 weeks. The total amount of compensation possible, $4,000.

Partial Disability.—Partial disability following total disability, and necessitating employment at reduced wages, calls for payment during partial disability of ½ the difference between wages previous to and subsequent of the injury. And when partial disability is permanent, such as involves the loss of a member, payments are to be made according to a specified schedule, which ranges up to the loss of an arm calling for payment of 50 per cent. of average weekly wages during 200 weeks, or a maximum payment of $2,000. Loss of both hands, both arms, both feet, both legs, both eyes, or any two thereof constitutes total and permanent disability.

Why It is Desirable for Employers to Operate under the Law.—The Michigan law is not compulsory; that is, no employer is compelled to operate under it unless he so elects. A similar law, passed in New York several years ago, imposed upon the employer certain payments which he was compelled to make; but the New York Supreme Court held the law was unconstitutional, because it deprived the employer of property without due process of law. The Michigan law remedies this defect by making it optional with the employer to come under the law; but (and this is not understood by all employers and apparently a few of our Michigan gas companies) the law creates such a condition that the employer who does not elect to operate under it is taking a grave risk. The first thing the new law does is to abolish the three common law defenses of the employer: Assumption of risk, contributory negligence, and fellow servant negligence, leaving the only defense in case of injury to an employee to prove wilful negligence on the part of such employee. It will readily be appreciated how much chance an employer (let us say, a gas company) would have in proving wilful negligence on the part of the employee to the average jury. In other words, by removing the three defenses, the new law changes a condition, which, under the common law, was unfortunate enough, to one simply intolerable. It is, therefore, distinctly to the employer's advantage to elect to operate under the compensation law, in which case he escapes every liability, except as provided by this law, for the death of or personal injury to any employee. The only kinds of labor not covered by this law are farm hands and domestic servants; also persons employed but casually.

Administration of the Law.—The administration of the law is in the hands of an Industrial Accident Board, of 3 members, appointed by the Governor. Their term of office is 6 years, a new member being appinted every second year, not more than two members to belong to the same political party. The board is to appoint a secretary, sufficient assistants, and clerical help. The first annual appropriation for the expenses of the Board was $25,000, the appropriation for the second year to be $40,000. The Board under the law has very great powers; but whether, in the cases passed on so far, it has exceeded its authority cannot be stated at this time, because no Supreme Court decisions have been handed down in the cases that have been appealed. Under the law, the Board is the court of last resort as to findings of fact, but the Supreme Court has the power to review questions of law involved in determinations of the Board.

An essential principle of the law is that the employee shall be certain of the amount of compensation and certain of payment without litigation, it is clearly provided that those who come under its provisions must give satisfactory evidence of their ability to make the payments. The Board must authorize the employer to carry his own risk, or to insure in an employers' liability insurance company, or to insure in any employers' mutual association organized under the laws of this State, or with the State Commissioner of Insurance. After the Board has approved of the employer's election to operate under the law every accident must be reported to the Board, under penalty of $50, and no settlement can be made with the employee without the approval of the Board. The Board in its rulings shows it is determined that the spirit, as well as the letter, of the law be carried out. As soon as a case comes before the Board, either by notice from the employer or from the employee, it is followed up until the proper disposition has been made, and it is the purpose of the Board to have the files in every case show that justice has been done to both sides. In an interview with the Secretary of the Board the writer was able to learn of some of the cases that have come before it for arbitration and review, also to get a pretty clear idea of its policy. It is quite apparent that not only employees, but also some employers, endeavor to disregard the provisions of the law, and it seems the policy of the Board in general that the employer is better able to look after his interests than the employee; therefore, if there is a doubt, the employee is given the benefit of it.

Procedure in Case of Dispute.—All agreements in regard to compensation must be submitted to the Board for approval and, if approved, are final and binding. If, however, an agreement is approved by the Board, and subsequent events prove that the compensation was inadequate, the case may be reopened. In case of a dispute between the employer, or the insurance company carrying his risk, and the injured employee, either party may notify the Board, who will then call for the formation of a committee of arbitration, to comprise 3 members, 1 of whom will be a member of the Board, who will act as Chairman, the 2 other members being named by the respective parties. Unless a claim for review is filed by either party within 7 days the decision of this committee of arbitration must stand as the decision of the Board. If a claim for review is filed the Board as a whole will review the decision of the committee, and the decision of the full Board will be final and binding. Then, the law provides for

an appeal to the Supreme Court, which tribunal, however, will concern itself only with points of law.

Certain hazards over which the employer has very little control may cause very serious trouble. For instance, the risk that, after an employee has received an injury and has been properly taken care of by surgical attention, that he will himself be careless; for example, he may take off a bandage and infection set in. If this is the result of an injury during employment the employer is liable under the law; at least he would be held to be so by the Board, regardless of the subsequent carelessness on the part of the employee. The physical condition of his employee then becomes a hazard to the employer. If a man having a constitutional disease suffers injury, which is aggravated by reason of his disease, the employer must, nevertheless, pay him full compensation. It has been held by the Board that if an employee is injured during employment while in a state of intoxication the employer must pay compensation. The matter can almost be summed up thus:

That any disability which results from an accident suffered during the course of employment will have to be taken care of according to the provisions of the law, almost regardless of the employee's physical condition at the time of injury or his actions afterward.

That is practically what it amounts to, and just how far the law covers such cases the future must develop. The physical condition of his employees and their habits become matters of considerable concern to the employer operating under this law, and the result is bound to be that employers will reject the physically and morally unfit, whose burden will have to be assumed by society.

Some Decisions of the Industrial Accident Board.

The following decisions of the Board (sitting as a court of review) show better than anything else how the law is working out in practice:

Studebaker Corporation vs. Mrs. David Doig.—David Doig, husband of the applicant, was employed as a lathe hand. Claimant maintained that Doig died as a result of a scratch on his back caused by a steel shaving getting inside his shirt. No record of any accident. On arbitration no evidence was introduced to show that husband of claimant had met with an injury. No award.

Michigan Steel Casting Company vs. Silic.—Complainant claimed that while grinding a tool his hand slipped against the emery wheel, inflicting an apparent slight injury to the thumb. The wound was cleansed and dressed and he continued his work. As the wound did not heel properly, he was sent to the doctor, who tried to persuade him to have two stitches taken in the wound; but this he refused to have done. Later he consulted his own physician and, when he returned to work two weeks later, the thumb had been amputated at the first joint, the second doctor claiming that the thumb was broken and amputation necessary. On arbitration claimant was allowed compensation for 30 weeks.

Lavack vs. Diamond Manufacturing Company.—Lavack was employed as a boxmaker at $17.50 a week. No one in the plant knew of the injury, but a written notice was received from the injured man claiming that his eyesight had been impaired. On arbitration the claimant was allowed $8.85 per week during disability, for a period not to exceed 500 weeks. The decision of the arbitration committee was appealed from, and on rehearing before the full Board the decision was affirmed, except that the payment was reduced to $8.65 per week.

Limron vs. Pere Marquette R. R. Company.—Applicant suffered the loss of one foot with serious injuries to the other foot and one arm. Either injury would have rendered the applicant totally disabled. It is the contention of respondent that he is only entitled to half wages for 125 weeks, with such further compensation as shall seem necessary at the end of that time:

Held: That as applicant suffered the permanent loss of his right foot, which of itself would entitle him to compensation for 125 weeks, he is entitled to half wages during the continuance of total disability resulting from the injuries exclusive of the loss of his foot, in addition to compensation allowed for the loss of the foot.

Detroit Steel Products Company vs. Helen Jendrus.—Decedent suffered an injury which necessitated an operation. He refused to allow an operation until the next day, although he was told it was necessary. While under operation he vomited and some of the vomit was drawn into his lungs causing pneumonia, which resulted in his death.

Held: The refusal to be operated on when first requested is not so unreasonable as to defeat the claim for compensation, as he finally consented when convinced that the operation was necessary.

Spooner vs. Detroit Saturday Night.—Decedent was employed by the Winn & Hammond Printing Company, as engineer. The plant of the Detroit Saturday Night, having been damaged by fire, arrangements were made with the Winn & Hammond Company for the use of its plant. Decedent was killed while running an elevator the night respondent was using the plant. Respondent contends that he was not in its employ, and that running the elevator was out of the course of his regular employment. It was shown that respondents entered into a contract, that stipulated they were to furnish a competent man to attend to the engine. They did hire a man, but decedent insisted that he do the work himself.

Held: 1. That, as Spooner's work for Winn & Hammond ceased at 5 o'clock, and his pay for the night work was made by respondent, this was sufficient to make him their employee.

2. That, inasmuch as he met his death while running the elevator at the request of respondent's foreman, this was sufficient to bring his act within the course of his employment.

Rayner vs. Sligh Furniture Company.—Decedent was employed in the factory of appellant. It was customary to announce the noon hour by blowing a whistle, and employees were required to proceed to the end of the room in which they worked and punch a time clock before leaving. On the day of injury he ran from his bench (a distance of about 150 feet) to punch the clock and collided with a fellow workman, receiving injuries which resulted in death. There was a rule forbidding the men running to punch the clock, but the foreman testified that it was not strictly enforced.

Held: That the fact that such a rule was made is not controlling when its general violation is acquiesced in by the employer.

Hopkins vs. Michigan Sugar Company.—Decedent was employed as chief engineer. His duties consisted in exercising supervision over the six plants of the Company located in different parts of the State. On reaching home after one of his trips, there being no car at the depot, he started to walk home. After walking a number of blocks, a car came along and, starting to board it, he slipped and injured his head. Upon reaching home he explained to his wife, and later to other people, that he had met with an accident and stated in detail how and where it occurred. Respondent contends that evidence of the statements made by deceased was inadmissible as hearsay, and that there was no legal proof to show that the injury was received in the course of his employment.

Held: 1. That the statements relative to the accident made by decedent to his wife and others, immediately after the accident, are admissible in evidence.

2. That, inasmuch as decedent was injured while traveling between his home and his work, and the further fact that his traveling expenses were paid by respondent, such facts were sufficient to show that the injury arose in the course and out of his employment.

Clem vs. Chalmers Motor Car Co.—Decedent was employed as carpenter by defendant. While working on the roof of a building, during cold weather, he was asked by his foreman to come down and have some coffee (customarily served to men so employed). The ordinary means for descending was an extension ladder, but decedent chose to descend a rope. In some manner he lost his hold and was killed. Payment was disputed on the ground that the deceased was not injured in the course of his regular employment, and that the injury was the result of his intentional and wilful misconduct.

Held: That the manner chosen by deceased to descend from the roof did not place his act out of the course of his regular employment.

(To be Continued.)

New Methods and Appliances.

An Installing of the Speedy Order.—An interesting engineering detail was successfully conducted in the distribution system of the Fall River (Mass.) Gas Works Company, operated by the Stone & Webster Engineering Corporation, the work being done the morning of October 19th, and it had to do with the cutting-in of a Connelly governor, a part of the plant comprising the new coal gas installation, all of which is under the direction of Mr. A. F. Negus, Superintendent. The connection proposed involved the removal of approximately 60 feet of 16-inch pipe and two 16-inch Connelly governors, and the replacing of these with an equal length of 30-inch main and 2 Connelly governors—1 automatic, the other of the balance type, manufactured by the Connelly Iron Sponge and Governor Company

Fig. 1.—Showing Rigging Outside Governor House Which Raised the 16-inch Pipe Out of Ditch and Swung the 30-inch Pipe into Place; a Gin Pole Being Used to Swing the Parts of the Old Line in the Governor House out-of-the-way.

Fig. 2.—Showing the 16-inch Pipe out of the Ditch, Resting on Blocking, the Gin Pole Handling the Riser to the Old Governors.

Fig. 3.—Showing South Side of Governor House, with the Rigging Required for Handling Last Filler to Street Line.

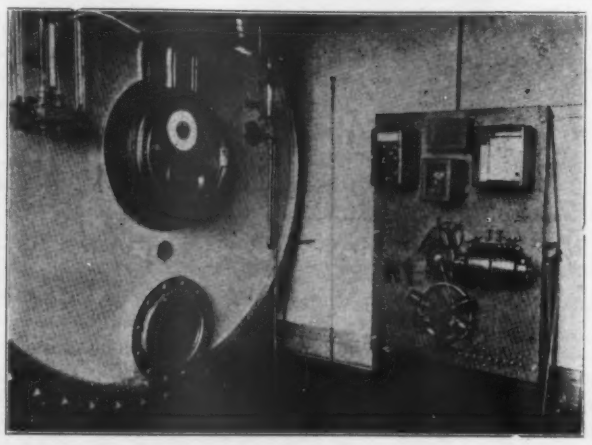
Fig. 4.—Showing Governor House Completed.

—the installation of these to be made in a small governor house of brick, which had been used for some time. The 19th October (Sunday) was chosen to make the necessary "quick hitch," because the interruption would occur at a day and hour when the consumption of gas in the city was at the lowest point. For several weeks the efficient organization of the Stone & Webster Engineering Corporation had been taking measurements, incident to the precise laying out of the task, so that the chances of a bad slip or vexatious hold-up would be minimized. A ditch was opened alongside, so that the 30-inch pipe could be assembled (in sections) on skids, one section (including a bye-pass and tee provision) of which was over 40 feet in length, had to be swung into place as soon as the 16-inch pipe had been lifted to the bank by means of suitable overhead tackle and rigging. Inside the governor house the new governors, together with heavy gate tees and bye-pass, had been aligned on rollers, ready to be moved into place, following the removal of the old governors by means of a gin pole, suitably located outside. The work was carried on by 3 squads, comprising a total of 38 men, including engineers and foremen. One squad removed the 16-inch pipe, and swung the 30 inch pipe north of the governor house into place; the second squad repeated that operation south of the governor house; the third squad took out the old devices, installing in their stead the Connelly instruments of the modern type. At 6:45 A.M. the main was cut and bagged at both ends, and the subsequent work proceeded with such remarkable smoothness and rapidity that, at 9:57 o'clock, or in a lapse of 3 hours, 12 minutes, the new pipe was in line and to grade, ready for the finishing caulking process, and the gas turned on. This latter part of the task was nicely and concertedly done by the street force of the Fall River Gas Works Company, many of the officials of this well managed corporation being on the spot to see to it that the consumers were not annoyed through interrupted service.

Removing Carbon From Gas Engines.—In a paper on this subject, which the author (Mr. A. Anglada) read before the National Gas Engine Association, mainly detailing his experiences with denatured alcohol for cleaning the interior of engines, he thus sums up: From a series of experiments on automobile motors in service for lengthy periods and on a few marine and stationary motors, I arrive at the following conclusions:

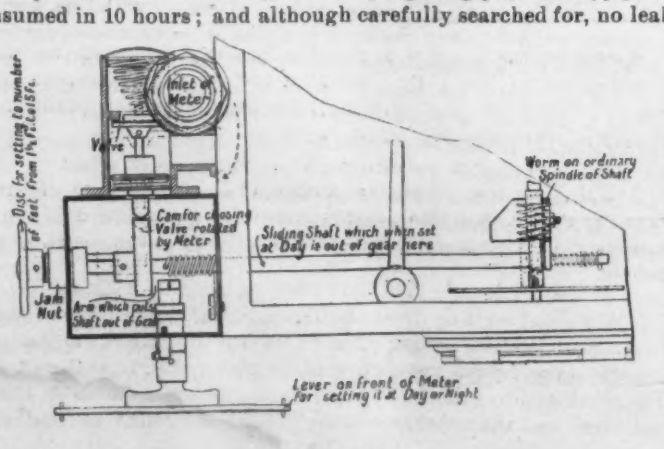
1. Denatured alcohol is an efficient decarbonizer for all types of gas or gasoline engines.
2. It does not injuriously affect the surfaces of the metals with which it comes in contact.
3. Heat is not necessary when using it as a decarbonizer.
4. Heat accelerates its action.
5. When introduced into the combustion space of an automobile cylinder which is at the working temperature of the engine it will loosen the carbon deposit from the walls of the combustion space so that it can pass out of the cylinder with the exhaust gases.
6. The best results from the use of denatured alcohol as a carbon remover are obtained when the combustion space of the hot engine is entirely filled with liquid, denatured alcohol and permitted to soak for not less than 6 hours.
7. It will act as a carbon remover when the engine is cold, provided the liquid alcohol is in contact with the carbon covered surfaces, but the action is about half as rapid as when the engine is hot.
8. The action of alcohol as a carbon remover when introduced in small quantities into the combustion space of a cold automobile engine is positive but slow.
9. Where the fit between the piston rings and cylinder walls is imperfect, the alcohol will leak past the pistons into the crank case and make the oil in the crank case unfit for lubricating the engine. However, the alcohol added to this oil, and circulated through the lubricating system of the motor, acts as a cleansing agent, as evidenced by the unusual amount of foreign matter withdrawn with the alcohol treated oil and the subsequent improved action of the engine.
10. Due to the cleansing action noted in the preceding conclusions, an engine which has been in service for an extensive period will show a marked increase in operating efficiency when thoroughly treated with denatured alcohol.
11. It is advisable to introduce, in the manner noted in the experiments, from 2 to 4 ozs. of denatured alcohol (depending upon the size of the cylinders) into each cylinder of an engine, at intervals of about 3 days, to keep the cylinders freed from carbon deposits.

An Electrical Gas Meter.—The illustration herewith shows the two station meters used by the Citizens' Gas and Electric Company, of Waterloo, Ia., the larger drum meter measuring the water gas made, and the electrically operated meter (its control board is shown), records the sendout of mixed gas.



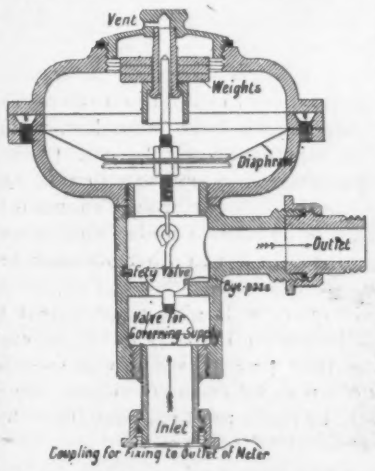
In its operation the Thomas meter utilizes the principle of heating electrically, through a small fixed rise, the gas traversing its measuring chamber, and determining the current required to keep constant the difference between the inlet and outlet temperatures. The temperature of the gas before and after passing the heating grid is determined by electric resistance thermometers, which control relays adjusting the current flowing through the grid, so that the temperature difference is held constant. The energy required to keep this differential constant is proportional to the gas passing, and the current taken by the heater is thus an index of the cubic feet of gas passed. A watt-hour meter on the panelboard is graduated in cubic feet, and a curve drawing ammeter makes a continuous record of the gas flow.

A Safety Gas Meter.—Some Continental gas companies, it is said, are using, to quite a large extent, a so-called safety meter. It comprises a special attachment, on the inlet side of the meter, arranged to give a predetermined volume of gas, with a governing device on the outlet, the function of which is to cut off the supply when the pressure falls below a selected minimum. The apparatus is described as being for the security of gas consumers during the night. On the front of the case is a lever which can be thrown to points respectively marked "Day" and "Night." If it is pointing to "Night," only the selected quantity of gas can pass, and after this volume has gone through the meter, the supply is shut off as in the ordinary prepayment meter. For houses with few rooms the quantity is generally set at from 2 to 4 cubic feet, while for larger houses, or those having more bedrooms, it may be made anywhere from 7 to 10 feet. In the morning the lever is thrown over to "Day," turning on the full supply of gas; but, to prevent danger, through a fixture cock having by chance been left open, a special governor is put on the outlet, which will not allow any gas to pass unless all outlets are closed, and which allows full supply to pass as soon as all are shut off. Setting the lever at "Night," one has at disposal a sufficient supply of gas for most purposes, but should it escape unconsumed the volume is too small to cause gas poisoning or danger of explosion. That it can also be used to run down leaks is shown by the following incident: In a large office, a 100-light "Safety" meter was placed, because it often happened that when the janitor went over the premises in the evening, cocks of appliances, with bye-passes, were found open. This was due, of course, to someone turning on a burner with an extinguished bye-pass. When the meter was installed (the supply was fixed at 12 feet) it was noticed that every morning it was entirely consumed. Shutting off every lighting-jet, the supply was consumed in 10 hours; and although carefully searched for, no leaks could be found in the piping. Finally, the leakage was traced to the stopcocks of two stoves, which when closed allowed that much gas to pass.


Inlet of Meter
Valve
Disc for setting to number of feet from Pt. to Str.
Jam Nut
Worm on ordinary Spindle of Shaft
Lever on front of Meter for setting it at Day or Night

The special apparatus on the inlet of the meter consists essentially of a valve on the gas supply operated by a cam, mounted on a long spindle, and driven by spur gearing from the meter index spindle. This long spindle is moved in and out of gear by the lever; and the position of the cam can be altered so that the meter will pass a greater or less quantity of gas before shutting off, the change being made by setting a movable disc and pointer to the quantity desired. The governor used on the outlet side of the meter is of a type applicable to other uses also, and can be employed on either high or low pressure service.

The one illustrated has a leather diaphragm, but they are also made with mercury seal and float. Their distinguishing features are the double cone-valve closing when the diaphragm is all the way up or all the way down; and the weights that are applied in the middle of the vise of the stem. When the governor is installed its valve is closed downwardly, as in the cut, and the gas passes the closed upper valve by the bye-pass hole. When it has filled the piping, if there is no appreciable leakage, the pressure rises and lifts the unloaded diaphragm, the valve opens, and the weights over the diaphragm come into action, the lower valve closing when the predetermined pressure is reached. Now, and until the upper valve is again seated, the governor acts like any other—giving a constant outlet pressure, and shutting off when the diaphragm rises high enough to seat the lower of the two valves. A mercury safety seal is provided which, if the lower valve fails to close when pressure rises, will blow and put enough pressure on top of the diaphragm to close the upper valve and shut off the supply. In case of interruption of service while gas is being burned, the governor will remain shut until all outlets are closed.



Correspondence.

[The Journal is not responsible for the opinions expressed by correspondents.]

Mr. Berkley Explains the Situation.

Balaklala Consolidated Copper Co.,
Coram, Shasta County, Cal.,
October 29, 1913.

To the Editors, American Gas Light Journal: I am in receipt of a clipping (sent me while up in the mountains) taken from your much loved paper, under date October 13th, second column, page 239, reading as follows:

"And the expected came to pass; but, if investors will not retain competent men to look after such things, they most assuredly will pay for their laxity. All of which is introductory to this paragraph that was sent us by way of Redding, Cal., under date of October 2d.: "The Balaklala smelter plant at Corona, was shut down last week, and virtually the entire force was laid off. The tryout of the Hall "process" (hear ye) "plant cannot be made on the generating plan, because of defects. Crude oil does not make the right kind of gas." (Did it ever do so, *a la* Hall?) "F. M Leland, General Manager, will leave for the East in a day or so 'to consult' with the officials of the Company. Leland says he will return soon" (soon, mind you), "and is confident the defects in gas generating can be corrected." (Can, not will, d'ye see?) "The temporary shut down at Coram is disappointing, as it was thought the smelters would run to nearly full capacity."

As I happen to be doing the consulting in the construction of the gas plant to be used in the application of the Hall process, my familiarity with the whole matter enables me to say that your informant is unreliable, untruthful, cowardly, very likely a socialist of the red dye type, who never sees anything good in the efforts of others who are willing to spend money to develop great industries.

The Hall process is a patented process, for the purpose of desulphurizing copper ore and the recovering of sulphur and not gasmaking in any sense; but gas as a means of fuel is one of the elements entering into its operation. The gas works being erected is a standard, crude oil works, such as I have erected in Los Angeles, Colton and Imperial Valley; in fact several places in Southern California, the success of which has never been questioned. The Stacey Mfg. Company is furnishing a 30,000 foot holder and the generating plant will have a capacity of 40,000 cubic feet per hour. Mr. Hall's expert on the ground is Mr. H. F. Wierum, consulting engineer for the Tennessee Copper Company, a metallurgist of note with much experience.

Mr. F. M. Leland, besides being General Manager of the Balaklala Company, is also President of the Empire Copper Company, a very successful mining corporation at Mackay, Idaho, and is a man known in the mining world for his determination and successes.

The Balaklala Company has plenty of money to carry out its plans and is willing to spend the same to meet the requirements of the Court's order regarding the discharge of SO_2 from its smelter, which order has caused this smelter to lay idle for the past 2 years. During the interim it has sought the most recent developments in this and other countries, in the effort to find a plan that would enable it to again operate this property, which is impossible under known and tried methods of smelting, such as those in use in other places where court orders have not as yet reached.

Lastly, the operation of this Company will give employment to about 800 men, and affect the entire copper industry in the proving of the commercial success of the Hall process, which was successfully demonstrated in New York to the satisfaction of eminent engineers and mining experts. We will be ready to start about December 15th, and I hope to have the pleasure of telling you (in a descriptive article) of a new use for gas on a very large scale. I know you will be glad to correct a statement that is misleading by giving space to this letter. Yours very truly, JOSEPH M. BERKLEY.

Recent Patent Issues.

Prepared for the AMERICAN GAS LIGHT JOURNAL by ROYAL E. BURNHAM, solicitor of patents and counselor in patent causes, 833 Bond Building, Washington, D. C., from whom illustrations and specifications of any patent mentioned below may be obtained for 20 cents.

1,076,158. Washer for Producer Gas Generators. P. G. Schmidt and W. M. Gore, Olympia, Wash.
1,076,344. Gas Burning Furnace. J. E. Bell, New York City, assignor to the Babcock & Wilcox Co., same place.
1,076,401. Gas Generator. T. H. Armstrong, Chicago, Ills., assignor to Dearborn Novelty Co., same place.
1,076,458. Gas Purifying Apparatus. W. Schwartz, Dortmund, Germany.
1,076,774. Safety Gas Appliance. H. J. Long, New Brunswick, N. J.
1,076,823. Gas Producer. L. Friedman, New York City.
1,076,849. Process of Making Gas. G. J. Weber, Kansas City, Mo.
1,076,855. Proportional Meter. T. B. Wylie, Pittsburgh, Pa., assignor to Equitable Meter Co., same place.
1,076,857. Gas Burner. J. B. Anderson, Shaler township, Allegheny county, Pa.
1,076,892. Gas Burner. C. F. Krugh, Dormont, Pa.
1,076,970. Multiple Gas Burner. E. E. Frederick, Bridgeville, Pa.
1,077,073. Gas Burner. C. H. Hook, Pittsburgh, Pa.
1,077,208. Proportional Meter. T. B. Wylie, Pittsburgh, Pa., assignor to Equitable Meter Co., same place.

Items of Interest
FROM VARIOUS LOCALITIES.

"WE have lost the companionship of association with A. P. Wood, who left the service of the Mount Clemens (Mich.) Gas Light Company the 2d inst., to assume charge of the new business division of the Winona (Minn.) Company, which is also a member of the properties of the American Public Utilities Company. However, since it means promotion for him, we certainly wish him all posssble success.—G."

"B. S. L.," writing from Uniontown, Pa., under date of the 30th ult., says "That 30 employees of the Fayette County (Pa.) Gas Company, representing the Uniontown, Scottdale and Mount Pleasant divisions, held their annual 'get together' seance one evening this week. The session was had in the Masonic Building, Uniontown, and during its continuance several interesting topics, relevant to the relations of the Company's men to its customers, were profitably discussed. A 'smokerfest' preceeded adjournment."

JUDGE FLANNELLY has decreed that the property of the Kansas Natural Gas Company is distinctly under the jurisdiction of the receiver appointed by the State Courts, which puts the receivers appointed by the Federal Court entirely out of control.

"D. C. P.," writing from Missoula, Mont., under date of the 6th inst., says that, under the new management (which assumed control August 16th), matters there are progressing to the satisfaction of all concerned. Mr. B. D. Sheriff, formerly connected with the Iron Mountain (Mich.) gas plant, has charge of manufacture and distribution. The Company has contracted with the Equitable Meter Company, of Pittsburgh, Pa., for 500 high pressure regulators, which will all be set in by January first. Other improvements are also being made on the generating and purifying sections of the works. The University of Montana, and the County High School as well, instituted domestic science departments this year, and the cooking demonstrations are all done by means of gas ranges, etc. The installations are of the latest type, one being on the Eclipse plan, the other from the shops of the Kewanee (Wis.) Manufacturing Company.

MR. S. E. DEFREESE, Manager of the Chattanooga (Tenn.) Gas Company, has about completed plans for the extension of its main system to St. Elmo. Work on the Oak Grove extension is proceeding satisfactorily.

THE negotiations which will enable the Attleboro (Mass.) Gas Light Company to extend its main system to and through the outlying districts of Dodgeville and Hebronville are in a fair way to satisfactory solution. It is probable that the Dodgeville lines will be put in this month, but the Hebronville lines will not be placed until next spring. Meanwhile, it is not altogether out-of bounds to say that, if the local authorities (particularly of Hebronville) had not been so unmindful of their promises as "representatives of the people," the latter would have had gas a twelvemonth ago.

MR. STEPHEN C. POHE, General Manager of the Columbia and Montour (Pa.) Gas Company, has also been named General Manager of the Northumberland County (Pa.) Gas and Electric Company. Mr. Richard Barrett, the Superintendent at Milton, Pa., has been appointed Manager of the Milton branch, and Mr. G. W. Beck remains in charge of the gas division in Sunbury and Northumberland. Mr. F. G. Requa, of Sunbury, has been appointed Engineer for the Northumberland County Gas and Electric Company and for the Columbia-Montour Electric Company. These changes are consequent on the taking over of the Northumberland-Columbia-Montour properties by the Walbridge syndicate.

THE Union Gas and Electric Company, of Cincinnati, O., will be ready to receive bids on its proposed new plant on or before December 31st next. This part (it refers to the generating, condensing and purifying systems) of the work involves an expenditure of not less than $500,000.

THE new plant of the Independence (Ia.) Gas Company has been put in successful operation.

MAYOR STOTZE is preparing a plan for the purchase of the plant of the Manitowoc (Wis.) Gas Company, for operation on municipal account. The place has for some time been operating plants for its supply of water and of electric currents.

"B. M.," writing from Port Arthur (Tex.) under date of the 5th, says the Port Arthur gas plant is completed and successfully in commission. It is of modern type and is fully up to the needs of 40,000 people.

"M. S. V.," writing from La Grange, Ga., under date of the 5th inst., says that construction work on the buildings, to house the generating and purifying plants of the gas works, is well underway. The main building (30 feet by 28 feet, by 30 feet) is to be of concrete and steel, and the apparatus (to be furnished by the Gas Engineering

Company, Trenton, N. J., F. D. Moses, President), will be up to a production of 150,000 cubic feet each 24 hours. The contract for the entire work was awarded to the bid of Mr. J. N. Hazlehurst, Atlanta, Ga., and the supervising engineer is Mr. G. H. Sargent, also of Atlanta.

"B. L." is informed that Mr. C. Pohe, who has just been appointed General Manager, the Northumberland County (Pa.) Gas and Electric Company, was formerly a resident of Bloomsburg, Pa.

MR. GEORGE E. RUSSELL, formerly Special Agent, the Kansas Gas and Electric Company, has associated himself with Mr. J. J. Bulger, in the line of collecting and special work. Their offices are in the Anchor Trust Building, Wichita, Kas.

THE special election, to determine whether or not the franchise (granted to Mr. George Carson and associates, of Iowa City, Ia.) to operate the gas plant in Mt. Pleasant, Ia., shall become operative, has been set for the 28th inst. The new ordinance provides these maximum selling rates—the grant is to have a life of 21 years: First 5 years, $1.45; second 10 years, $1.35; last 6 years, $1 30.

THE residents of Hibbing, Minn., are anxious to have a gas plant, and the applicants for the right to furnish the supply are confronted with the active opposition of the authorities, who declare that it would be unwise to enact the necessary ordinance, in that a gas supply would likely materially interfere with the maintenance and progress of the electric lighting plant now, and for some time back, operated by the manicipality.

MESSRS. PETER ENGLISH and associates, of San Francisco, have applied to the City Council, Victoria, Tex., for a franchise to there construct and operate a gas works. Victoria, the capital seat of a similarly named county, is on the east bank of the Guadalupe River, at a point about 100 miles east southeast of San Antonio. It is the center of a very fertile region devoted to stock raising, agricultural and lumbering industries. It has large mills devoted to the production of cotton seed oil, and is the banking section for a district of 150 miles or more. St. Joseph's College and the Nazareth Seminary are live leading bodies, and the place grows rapidly in population and wealth. In 1890 its population was 4,100 or so; now its population numbers 12,000 or more.

AT a recent meeting of the Gas Employees' Association, of Reading, Pa., these officers were elected: President, E. A. Glicker; Vice-President, Wm. Glicker; Secretary, Miss L. Scott; Committee, Papers and Appliance Demonstration, D. K. Murdock (chairman), and Irvin Krick; on Entertainment, J. P. Sands (chairman), Roy Stoner and A. J. Hooper. At the close of the business session, refreshments were served. It was also determined to hold the next meeting, Thursday, the 20th inst., in the new premises, Penn Square.

THE Building Department, City of San Diego, Cal., has issued a permit for the erection of an electric sign, which it is said will be the largest one ever put in place in Southern California. This sign (and it will carry 32,000 lamps) will be 48 feet in height, and it is to be placed on the roof of the Jos-e Building, at a cost of not less than $10,000. Running along its top line will appear, done in large letters, the words: "San Diego! First Port of Call." The lower half of the board will be covered with electric signs, of the revolving type, displaying the names and nature of the trading of several of the large business firms of San Diego. The current for the displaying will be furnished from the plants of the San Diego Consolidated Gas and Electric Company.

FOLLOWING the agitation for a cheaper gas rate in Colton, Cal., Mr. Z. T. Bell, Manager of the Citrus Belt Company, offered to make a 25 cent per 1,000 concession, and the authorities accepted the proposition. Hence the rate will be $1.25 per 1,000, "until further notice."

ON the 7th inst., the South Delaware Gas Company, which had operated the gas plant at Seaford, Del., until the property was recently sold at Receiver's sale, has been reorganized by the bondholders' committee. The title of the succeeding or reorganized corporation is the Sussex Gas Company, with home offices in Philadelphia. It is capitalized in $100,000, of which only one-fifth has been issued. The Directors are: Edwin H. Bell, Haddonfield, N. J.; M. H. Harrington and H. M. Tracey, Philadelphia; C. E. Hastings, Lowel, Del., and E. J. Winder, Seaford, Del. The Directors have perfected the following executive management: President, E. H. Bell; Vice-President, M. H. Harrington; Treasurer, H. M. Tracey; Secretary, W. D. McCrackin.

THE Railroad Commission, of California, has assented to the petition of the Coast Valleys Gas and Electric Company to issue $114,000 bonds, the proceeds to be used to pay the existing indebtedness of the Company.

THE proprietors of the Vancouver (Wash.) Gas Company have determined to remodel instead of close down the plant, now that the supply is being received under high pressure from the Portland (Ore.) works. The Vancouver installation will be held as an emergency plant.

THE City Council, of Decatur, Ga., is considering the application of the DeKalb Civic Service Company for the right to construct and operate a gas plant in Decatur. The Company has been incorporated, to transact a public utilities business in general in DeKalb county, Ga., by Philadelphia capitalists, who are represented in the Decatur instance by Neal G. Goss, an attorney of prominence in the county. It is said to be the purpose of the corporation to eventually carry on a gas supply to the settlements of Kirkwood, Oakhurst and East Lake.

THE Holland (Mich.) Gas Company's proprietors have about succeeded in arranging a means whereby they will be enabled to supply Zeeland with gas, which settlement is some 5 miles from Holland. Under the agreement, as we understand it, the rate in Holland is to remain at 90 cents per 1,000 cubic feet until the annual output reaches 50 millions cubic feet, when the rate is to rule at 80 cents. Meanwhile Mr. Blaine Gavett and associates secured a franchise to supply gas in Zeeland, a separate system to be employed. Preferring to purchase gas from the Holland Company, rather than to construct a generating plant in Zeeland, a contract for such supply was executed, and the Gavett associates applied for the right to hook-up to Holland mains, this application being necessary in that the Zeeland people would have to pipe certain streets or roads, jurisdiction over which was in the Holland authorities the moot point being the wish of the latter to have the Zeeland take of gas included in the total output of the Holland Company, so that the 80 cent figure would be the sooner reached. Hence the failure to give street or road consent until the Zeeland gas take was counted with the Holla nd take. Finding it impossible to gain the Holland officials consent, the Zeeland people secured the right-of-way through private property, and will tunnel the streets under which the necessary crossings must be made.

"MIDWAY," writing from Oroville, Cal., under date of the 6th inst., encloses this: "An assessment of $10 per share has been levied upon the $3,000,000 capital stock of the Midway Gas Company, delinquent the 29th inst., sale day for delinqnencies being set for December 16th. May 16, 1912, the directors offered the shareholders the alternative of paying an assessment of $7 per share or of loaning the Company $210,000, proportioned at the rate of $7 per share, the Company issuing interest-bearing notes for the indebtedness. The latter plan was accepted. The present assessment is payable $3 in cash and $7 in the notes above referred to, so the total assessments against the shares will aggregate $10, including the loan of May 16th."

A LINE from Hillsboro, Ills., dated the 10th inst., says that Mr. F. J. Reynolds, of Quincy, Ills., is now in Hillsboro acting as Manager of the local gas division of the Southern Illinois Light and Power Company. The Company is progressing rapidly with its gas plant, and the estimate now is that the gas will be turned on to the mains during the last week in December.

THE Madison (Wis.) Gas and Electric Company is returned as the largest individual sufferer under the income tax infliction, so far as Madison is concerned. Its contribution under the returns is fixed at $9,073.16.

LAST month Justice P. C. J. De Angelis, sitting in Supreme Court session, Watertown, N. Y., received a verdict of "No cause of action," in the suit brought against the Watertown Light and Power Company. Mrs. Louisa L. Wilson asked for damages in the sum of $8,000, which she averred had been caused to her property on Engine and Newell streets, Watertown, by "reason of the gases, smoke and disturbances created by the gas plant of the Company."

The Market FOR GAS SECURITIES.

There was no change in Consolidated quoted values as compared with those of a week ago, the figures this morning (Friday) being 127¾ to 128, ex-dividend of 1¼ per cent. The dark days of October were certainly productive of great results for the Irving Place people, and the Edison folks as well. The difference in output, on both accounts, as between October, 1912 and October, 1913, were surely enough to cause a slight gasp, when the figures first came to one's ears. And we are sorry we may not print them, merely to show how the sendout on gas account does not in any sense represent decadence.

At the last meeting of the Brooklyn Union Company's proprietors, that eminent jurist, Mr. Bourke Cochran, aided by an uninfluential coterie, made their little kick against the conservative policy of the Company in respect of the dividend returns. The party represented less than a fair minority, it uttered its little scream, and then retired—rather, subsided. The shares show some increasing strength, the quotations current being 122½ to 126. October, too, was a blazing month with Brooklyn Union in respect of sendout.

Peoples, of Chicago, is weak and lower, the quotations for it being 122 to 122½. During the recent rise in it quite some investment stock came out; and, strange to say, one institution in this city sold a block (it stood it just 82) and re-invested the whole proceeds in city 4's. That may have been good judgment, but, under the circumstances, the institution will have some work cut out for it to get a like return on interest account.

The Pacific Gas and Electric Company's dividend of 1¼ on preferred is payable to-morrow, the 15th, and the regular quarterly of 1¾ on the J. G. White Engineering Corporation's preferred is payable the 1st prox. The Company progresses finely. United Gas Improvement Company is steady, at 166 to 168. Rumor has it there will be some readjustment of its capital, the change to occur early in the new year. Its business keeps going to the good all the time. That model public body, the Massachusetts Board of Gas and Electric Light Commissioners, through its Chairman (Mr. Forrest E. Barker), at the recent meeting, in Washington, D. C., of the Railway Commissioners, was represented by a paper, really remarkabable for the fairness of its views and the strength with which they were expressed. Respecting surpluses accruing to corporations the result of careful management, the Commissioner said:

"Any surplus plainly should be retained in the Company's assets. To distribute it among the shareholders would be as unjust to the public as any attempt by the public to wrest it from the Company would be unjust to the shareholders. But it by no means follows that its acquisition and existence create any new right in the Company or duty in the public with respect to the rate to be charged. Such a conclusion would seem necessarily to presuppose that the compensation already obtained has not been reasonable, which contradicts the idea of surplus already stated."

There's commonsense. The market for gas bonds continues quite active. Recent sales included a block of Chicago gas, 5's, at 101. Consolidated (city) short term 6's are 100¼; and American Gas and Electric 5's are 83½, bid. American Light and Traction is 332 to 335. Washington (D. C.) is 420 to 425.

Gas Stocks

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

NOVEMBER 17.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$99,816,500	100	127¾	128
Central Union Gas Co.—				
1st 5's, due 1927, J. & J.	3,500,000	1,000	101	103
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	105	106
Mutual Gas Co.	3,500,000	100	157	157
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	99	101
New York & Richmond Gas				
Co. (Staten Island)	1,500,000	100	59	62
1st Mtg. Gold Bds. 5 p. ct.	1,500,000	–	98½	100½
New York and East River				
1st 5's, due 1944, J. & J.	3,500,000	1,000	105	106
Con. 5's, due 1945, J. & J.	1,500,000	–	98	100
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	100	102
Standard	5,000,000	100	102	104
Preferred	5,000,000	100	93	94
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	91	95
The Brooklyn Union	15,000,000	1,000	122½	126
1st Con. 5's, due 1948, M. & N.	15,000,000	–	106¾	107
Yonkers	299,660	500	120	–
Out-of-Town Companies.				
Essex and Hudson Gas Co.	6,500,000	–	133	135
Fort Wayne	2,000,000	–	–	
" Bonds	2,000,000	–	55	–
Grand Rapids Gas Light Co.,				
1st Mtg. 5's	1,250,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of				
New Jersey	10,500,000	–	130	134
" Bonds, 5's	10,500,000	–	104	106
Indianapolis	2,000,000	–	85	90
" Bonds, 5's	2,650,000	–	90	93
Jackson Gas Co.	250,000	50	82	–
" 1st Mtg. 5's	200,000	1,000	97	100
Laclede Gas Co., St. Louis.	10,000,000	100	95	98
Preferred	2,500,000	100	–	102½
Bonds	10,000,000	1,000	102½	103
Peoples Gas Lt. & Coke Co.,				
Chicago	25,000,000	100	122	122½
1st Mortgage	20,100,000	1,000	102	102½
2d "	2,500,000	1,000	104	–
Pacific Gas and Electric Co.	15,500,000	–	24	35½
St. Joseph Gas Co.—				
1st Mtg. 5's	1,000,000	1,000	95	98
St. Paul Gas Light Co.	2,500,000	100	–	–
1st Mortgages, 6's	650,000	1,000	104	105
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	3,447,000	1,000	94	96
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
United Gas Imp. Co.	55,502,950	50	166	168
Washington (D. C.) Gas Co.	1,600,000	200	420	425
1st Mortgage, 6's	600,000	–	–	–

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

American Gas Institute.—Annual meeting, New York, October 21, 23, 1914. Officers: President, W. H. Gartley, Philadelphia. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting———1914. Officers: President, A. A. Dion, Ottawa; Secretary and Treasurer, John Keillor, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, New York City, Oct., 1914. Officers: President, J. T. Hutchings, Rochester, N. Y.; Secretary, C. H. B. Chapin, 29 W. 39th street, New York City.

Gas Meters.—Monthly Section Meetings; Grand Commissioner, Will. W. Barnes, East Orange, N. J.; Gen'l Sec'y, H Thurston Owens, La Crosse, Wis.; New York Section, Chairman, W. H. Pettes; Secretary, G. E. Smith, Sipp Avenue, Jersey City, N. J. Philadelphia Section; Chairman, Stanley Grady; Secretary, H. E. Stiteler, Broad and Arch streets. Cleveland Section, Chairman, F. R. Hutchinson; Secretary, Wm. Holtz East Ohio Gas Co. New England Section, Chairman, T. W. Jennings, Boston; Sec., F. K. Wells, 60 Broad street, Boston. Winona Section, Winona, Minn., W. F. Clausen, Chairman. Bethlehem Section, Trueman Weithrecht, Chairman; Sec.-Treas., Truman Buss, South Bethlehem, Pa.

Guild of Gas Managers of New England.—Annual meeting, March, 1914. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, March 18th and 19th, 1914 Chicago, Ills. Officers: President, W. F. Barrett, Chicago, Ills.; Secretary-Treasurer, Horace H. Clark, 115 No. Oak Park avenue, Oak Park, Ills.

Illuminating Engineering Society.—Annual meeting, Cleveland, O., September, 1914. Meetings of Sections, monthly. Pres., Charles O. Bond; General Secretary, J. D Israel, 29 W. 39th street, New York City. Sections: New York, Secretary, C. L. Law, 124 West 42d street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, J. B. Jackson, 28 North Market street. Pittsburgh, Secretary, J. C. Mundo, Oliver Building.

Indiana Gas Association.—Annual meeting, March ——— 1914. Terre Haute. Officers: President, A. S. Cooke, Terre Haute; Vice-President, A. C. Blinn, Evansville; Secretary-Treasurer, Phumer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, Davenport, May 27, 28, 29, 1914; Officers: President, B. C. Adams, Lincoln, Neb.; Secretary, G. L. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, October——1914. Arkansas City. Officers: President, Al. Newman, Arkansas City; Secretary and Treasurer, Ivan Thomas, Wichita Kas.

Michigan Gas Association.—Annual meeting, September, 1914. Place, undetermined. Officers: President, H. W. Douglas, Ann Arbor, Mich; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1914; Mexico, Mo. Officers: President, P. A. Bertrand, Joplin, Mo.; Secretary and Treasurer, P. W. Markham, Brookfield, Mo.

National Commercial Gas Association.—Annual meeting and gas show, Dec. 1-6, 1913. Philadelphia, Pa. Officers: President, C. W. Hare, Philadelphia Pa.; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, St. Louis, Mo., May 19 and 20, 1914; Officers: President, E. L. Brundrett, Kansas City, Mo.; Secy-Treas., T. Clive Jones, Delaware, O.

New England Gas Association.—Annual meeting, February, 18th and 19th, 1914, Boston. Officers: President, T. H. Hintze, Providence, R. I.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—Next Meeting, ——— ———, 1914, Asbury Park N. J. President, C. F. Butcher, Freehold, N. J.; Sec'y-Treasurer, O. F. Potter, Newark, N. J.

Ohio Gas Association.—Annual meeting, February ——— 1914 Columbus, O.; President, John M. Garard, Columbus, O.; Secretary, L. B. Denning, Columbus, O.

Oklahoma Gas, Electric and Railway Association.—Annual meeting, Oklahoma City May, ——1914. President, F. E. Bowman, Ada; Secretary-Treasurer, H. V. Boze Oklahoma City.

Pacific Coast Gas Association.—Annual meeting, Long Beach, Cal., September ——— 1914. Officers: President, C. S Vance, Los Angeles, Cal.; Secretary-Treasurer, Henry Bostwick, 445 Butter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, Allentown, Pa., April ———, 1914; Officers, President, J. A. Frick, Allentown, Pa.; Secretary-Treasurer, W. O. Lamson, Jr., West Chester, Pa.

Society of Gas Lighting.—Annual meeting Dec., 11, 1913. monthly meetings, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 29 West 39th street, New York city.

Southern Gas Association.—Annual meeting, Mobile, Ala., April 4, 1914, Officers: President, James Ferrier, Rome, Ga.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting, May——— 1914, Galveston, Tex. Officers: President, G. H. Gifford, Fort Worth Tex.; Secretary H. S. Cooper, 405 Slaughter Bldg., Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May ———1914. Milwaukee, Wis. Officers: President, Ewald Haase, Milwaukee, Wis.; Secretary-Treasurer, Henry Harman Milwaukee, Wis.